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SKETCH

THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.

OF THE

MEDICAL HISTORY OF THE NATIVE ARMY OF BOMBAY,

FOR THE

YEAR 1874.

[THE REGIMENTS ARE PLACED AS THEY STOOD IN THE ARMY LIST ON THE 1st JULY 1874.]

Bombay:
PRINTED AT THE GOVERNMENT CENTRAL PRESS.

1875.

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THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH

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No. 2667 of 1875.

From

The SURGEON-GENERAL,

Indian Medical Department,

To

The SECRETARY to GOVERNMENT,

Military Department.

Bombay, 16*th June* 1875.

Sir,

I have the honour to forward the Medical History of the Native Army for the year 1874 for submission to His Excellency the Governor in Council.

2. The figures in the margin show the strength of the army in the last three years, and also the deaths which took place in each of these: the average daily sick per cent. to daily average strength, with the number of admissions into hospital. The strength has varied so little that the difference can scarcely have had any effect on the variation in the other figures. The total deaths in the past year were—

Years.	Strength.	Deaths.	Average Daily Sick per Cent. to Daily Average Strength.	Admissions.
1872	22,903	226	4·54	36,209
1873	22,967	165	3·82	29,035
1874	22,750	176	3·66	26,601

In hospital ...	... 176
Out of hospital	... 72
Total...	248

or 2 more than in the year 1873. As regards the deaths in hospital, there was an increase of 11 over the preceding year, but 28 below the average of the past four years. There was an increase of 5 deaths in Sind, 4 in the Presidency, and 1 in the Northern and Poona Divisions, respectively. As regards the deaths out of hospital, the number was 72, or 9 less than in the year before. On the whole number of deaths the per cent. was 1·09 to the average strength, which is ·02 higher than in the year 1873, but ·20 less than the average of the past four years. The per cent. of daily sick to strength was 3·67, or less by ·16 than in the preceding year, and ·58 per cent. below the average for the last four years.

The admissions were 26,601, being 2,434 less than those of the previous year, or in the ratio of 116·92 per cent. to the average strength; being 9·94 below the percentage of the previous year, an 21·46 below the average of the last four years. The daily average number of sick under treatment was 835·7. The number of men invalided was 1,090, or 4·60 on the strength as it stood on the 31st December, which was 23,596; this is ·25 higher than was exhibited in my previous report, and ·81 higher than the average for the last four years. I shall notice this matter again further on. While more have been invalided for discharge, somewhat fewer have been sent to their homes for change of air.

3. The general health of the army may be said to be satisfactory, showing in all respects an improvement over the preceding year, with the exception of the very small increase in the number of deaths, and the marked steadily increasing number of invalids discharged for pension or gratuity.

PRESIDENCY DIVISION AND ADEN.

4. The strength of the troops in this division is the smallest of all, being only 3,343, which is very nearly the same as in the two preceding years. The average daily sick was 133·4, or 6·8 less than in the preceding year, and the details in Bombay with the detachments of the 21st Regiment N. I. in the Persian Gulf and the Aden Troop contribute largely to this. The number of admissions was 3,861, or 115 per cent. on the strength. This is nearly 2 less than the number for the whole army. The deaths were 32, or 4 more than in the preceding year and 1 less than in 1872.

Years.	Average Strength.	Average Daily Sick.	Number of Admissions.	Number of Deaths.
1872 ...	3,297	144·0	4,731	33
1873 ...	3,358	140·2	4,513	28
1874 ...	3,343	133·4	3,861	32

General Health.

5. The troops in this division have been, during the year under report, more healthy than in recent years, with the exception of the 26th Regiment at Surat. This corps was not in good health on its change to this station, consequent on a prolonged residence in Guzerat and Nasirabad, but in the previous year it improved considerably, something of this being due to the march to Poona and back, with the camp life at Chinchwad. Would not all our troops, if so employed each cold season so as to give a variety to their ordinary monotonous life, benefit much in health thereby?

Tanna.

6. At Tanna especially there has been less sickness and also fewer admissions from guinea-worm.

Bushire and Bassadore.

7. The men at Bushire and Bassadore have been so very unhealthy that I urgently support the recommendation of the Deputy Surgeon-General that their reliefs should take place oftener.

Aden.

8. At Aden there has been less sickness than during the three previous years, though the returns for the early part of the year show that some of the sepoys have not yet shaken off the fever contracted on field service in the interior. Many of the admissions into the regimental hospital at Aden are said to be the result of insufficient food combined with climate, causing the physique of the men to deteriorate. This is shown in the continued presence of scurvy to a more or less degree in the 5th N. I. since its return from Aden.

Lock-hospital.

The lock-hospital is reported to be proving of much use.

Sanitary.

9. In Bombay the drain at Sonapur continues to be as great a nuisance as ever; it is, therefore, no wonder that the native troops suffer, quartered, as the two corps are, between the night-soil depôt at Boree Bunder on the one hand and that above mentioned on the other.

Lines of 20th Regiment N. I.

10. I would invite attention to the remarks of the Medical Officer of the 20th N. I. on the state of the regimental lines. In such lines water-proof sheets, or some other mode of protection from damp, becomes a necessity to the men.

POONA DIVISION.

11. The strength of this division of the army was 8,197, or rather less than in the preceding year. The average daily sick was 241·2, or 9·2 less than was shown in the year 1873. The admissions were also less, being 6,855 as compared with 7,334 in 1873. There was one more death last year than in the preceding one, but 15 less than in the year 1872.

Years.	Average Strength.	Average Daily Sick.	Admissions.	Deaths.
1872... ...	8,577	319·7	10,703	51
1873... ...	8,209	250·4	7,334	35
1874... ..	8,197	241·2	6,855	36

Ague.

12. Ague has been very prevalent in this division, more especially at the head-quarters and at Sholapur. The Deputy Surgeon-General shows that in Sholapur, where the huts are the best and the drainage the most perfect, the number of fever cases was the highest. Some explanation of this will be sought. The admissions, however, from all causes were fewer than in the previous year.

Insanes.

13. Six men were sent to the Lunatic Asylum at Colaba from the regiments in this division.

Water.

14. Generally well reported of, except at Dharwar and at Asirgarh. At this latter, filters should be issued for use in the lines and hospital.

Physique of the Men in 13th Regiment N. I.

15. The want of proper physique in the men of the 13th N. I. is attributed to improper feeding.

Guinea-worm.

16. Guinea-worm is still very prevalent in Dharwar, no fewer than 185 cases having occurred in the 12th Regiment stationed there, of which 142 were in the months of April and May, at which time the water must be at its lowest. The attention of the Sanitary Commissioner might be called to this prevalence of guinea-worm. Can nothing be done to improve the water-supply? In my letter No. 3928, of 24th November 1874, I brought this subject specially to the notice of Government.

NORTHERN DIVISION.

17. The strength of this division was 8,362, or about 90 less than in the previous year. The average daily sick was 376·2, or 16·7 less than in the year 1873. The admissions into hospital were 12,426, being 1,072 fewer than stated for the year preceding. The deaths were 53, or 1 more than shown in my last report and 15 less than in 1872.

Years.	Average Strength.	Average Daily Sick.	Admissions.	Deaths.
1872 ...	8,054	427·4	15,735	68
1873 ...	8,450	392·9	13,498	52
1874 ...	8,362	376·2	12,426	53

General Health.

18. In this division the general health has been good as compared with the previous year; but, though the admissions were fewer, the mortality was slightly higher, as shown above. The troops in the Mhow Division were less healthy than those in the Northern. The highest rate of admissions was at Mahidpur, where the sanitary conditions are very unfavourable.

The general health of the artillery and cavalry was, as usual, better than that of the infantry. This is, I conclude, due to the better physique of the men.

Scurvy.

19. Scurvy showed itself particularly in the 3rd and 9th Regiments stationed at Ahmedabad and amongst the men of the 16th Regiment at Mhow. In the latter corps a large number of men were affected by it. This points out the desirability of the establishment of a Government garden at Mhow, where vegetables are scarce, and, consequently, probably beyond the purchasing power of the sepoys' pay, for supplying these essential articles of diet at a cheap rate to the men.

Rheumatism.

20. Rheumatism is a marked feature in the admissions in the 16th and 18th Regiments, but it is doubtful how far this disease is simulated for the purpose of invaliding.

Syphilis.

21. This disease has decreased at stations where lock-hospitals have been established.

Drainage.

22. The drainage is surface and sufficient, except at Indore, Mhow, and Mahidpur. At the two former, trenches are necessary. The defects at Mahidpur appear not to admit of removal altogether, but they have been improved.

Staff Hospitals at Mhow and Nimach.

23. The staff hospitals at Mhow and Nimach are used by civil patients, there being no special institutions for the reception of civil sick. I invite attention to Dr. Wyllie's remarks thereon.

Reports commended.

24. The reports of Surgeons-Major Murray, Thorold and Boustead are mentioned by Dr. Wyllie as deserving of commendation.

SIND DIVISION.

25. The strength was 2,848, or only 102 less than in 1873. The daily number of sick averaged only 84·9, or 7·8 less than in the year preceding. The admissions were 3,459, or 231 fewer than in the year before. The deaths numbered 55, or 5 more than were recorded in the previous year, but 19 less than in 1872.

Years.	Average Strength.	Average Daily Sick.	Admissions.	Deaths.
1872 ...	2,975	148·0	5,040	74
1873 ...	2,950	92·7	3,690	50
1874 ...	2,848	84·9	3,459	55

26. The Deputy Surgeon-General in his report traces the connection between the extent of surface water with the period of its drying up and the amount of sickness in the province.

Floods.

The latter part of the last hot season is stated to have been very oppressive, accompanied with stagnation of air and followed by the heaviest rain-fall on record since 1869. Heavy floods from the river on the one hand and from the hills on the other, combined with heavy rain, laid a considerable portion of the province under water, which might have been expected on drying up to have caused more than usual sickness in the province, but the returns show this was not the case.

Malarial Fevers.

Ague, which might have been expected to rise in numbers considerably under such circumstances, was the same in amount as in the previous year, but the deaths from remittent fever rose from 2 in 1873 to 10 in the year under report, and 9 of these were in Jacobabad, indicating that the type of the disease was of a more severe character. The number of cases in the two Belooch regiments shows that the influences at Hyderabad were much greater

than at Kurrachee, exemplifying the physical condition of the two camps, that of Hyderabad being subject to the consequences of the inundation, whereas Kurrachee has nothing of this kind.

Diseases of Respiratory and Digestive Systems.

27. The diseases of the digestive and respiratory systems both show a greater mortality in the numbers treated.

28. On the whole it may be summed up that the great floods have not in any direct way caused either an increase in the treated or deaths to any material extent; and, considering the preceding year was unusually healthy, the above statement is all the stronger. Dr. Miller in his para. 14 explains this in the following words :—

> "The only solution of this, and the one which most readily presents itself, is found in the fact that large tracts of the country were under water during the time the sun's rays had the greatest power. This restricted the development of malaria and diminished the tendency to bowel complaints, and when the winter months arrived there was still so much water and moisture on the surface that the sudden alternations of temperature between day and night were to a considerable extent equalized. The cold season also, at least in its earlier part, was remarkable for its mildness, and the usual period for affections of the lungs was hereby shortened."

The sickness and deaths in the two Belooch regiments has been already noticed. Those in the Frontier Field Force, varying in numbers as they do in regard to each regiment, point possibly to some defect in the original selection of the recruits; but it is impossible to generalize on the returns for any single year, as the weeding out of sickly men in one year may show the regiment as very healthy in that following.

Epidemic Disease.

29. The year under report has been free from epidemic disease, with the exception of a few cases of measles in one of the regiments at Jacobabad. This disease to some extent prevailed among the civil population throughout the province.

Respiratory System.

30. Pneumonia was confined to the field force, whilst bronchitis prevailed in the regiment stationed at Kurrachee. Jacob's Rifles returned a large number of diseases of the spleen.

Sind Boil.

31. Sind boil prevailed to some considerable extent in the Field Force.

Fort of Hyderabad.

32. The insanitary state of the fort of Hyderabad at an unhealthy period of the year, was the cause of a low type of fever which rendered the removal of the residents out of the fort necessary, and measures were at once taken to improve the state of matters.

Conservancy of Jacobabad.

33. The latrines of Jacobabad appear to be still in a very bad state. I referred particularly to this subject in para. 34 of last year's report.

Physique of the Frontier Force.

34. On inspection of the troops in Jacobabad Dr. Miller found the physique of many of the men below par, and many presenting an unhealthy and sickly appearance. The recruits are represented as very far from good, many of them under-sized and ill-made. This would strengthen my previous remark that the

low physique of the recruit has, probably, a great deal to do with the sickness and high death-rate in the Frontier Force. I would respectfully ask attention to the remarks of the Deputy Surgeon-General on this point.

Water-supply.

35. The water-supply question in Kurrachee is still under consideration. In Hyderabad works are in progress, which when complete will give a supply from the Indus river to the town and camp. In Jacobabad the supply is from wells of doubtful purity.

Lock-hospital.

36. The results of the Kurrachee Hospital have been more favourable in the last year than in the two preceding. More women attended regularly, and the diseased were fewer. The benefits to the troops are shown in the diminished admissions for syphilitic disease. Further evidence of the benefits is shown by the immunity from disease among the crews of four ships of the Persian Gulf squadron, the commanding officers of which reported that they had never known their men so free at any port they had previously visited.

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37. Having given a short *resumé* of the health of the army by divisions I now proceed to make a few general remarks.

Movements of Troops.

38. In the Presidency Division there were no changes; in that of Poona the only corps moved was the 11th Regiment from Satara, replaced by the 4th Rifles from Baroda, giving a detachment to Asirghar. In the Northern Division about one-half the troops changed stations; but, with the exception of the regiment above named, these movements took place within the division. In Sind the two Belooch regiments changed between Kurrachee and Hyderabad.

Observation of Climate.

39. Were climate and its effects carefully noted, I believe we might, in time, arrive at some definite conclusions with regard to the appropriate transfer of regiments from one station to another, with the great consideration of preserving the health of the soldier.

Water, &c.; effects on Climate.

40. This has not been particularly remarkable, except in Sind, and has been noticed in connection with the health of the troops in that province.

Influence of Water-level upon Disease.

Investigations by Medical Officers are now to be carried on regarding sub-soil water-level, the results being communicated to the Sanitary Commissioner. In course of time some practical conclusions may be arrived at regarding this vexed question; at present facts equally favouring opposite conclusions. Dr. Wyllie is giving his attention to the subject of sub-soil water as affecting the health of troops, but at present has not sufficient data to found an opinion upon.

Lines, &c.

41. The state of the various lines are carefully noted by the Medical Officers and their defects pointed out.

Conservancy and Sanitary Arrangements.

42. Though faulty in some stations these are, upon the whole, good. The dry-earth system is very generally employed, except in some cantonments, as Nimach and Augur, not adapted for its use by reason of the rocky nature of the ground, or in certain seasons as the monsoon, when it cannot be be carried out. The system is found to answer well. In connection, however, with this system I would ask attention to the remark by Surgeon Kiernander regarding the trenches being usually made too deep for the native plough to

reach them. If this is really the case we are only heaping up large collections of ordure in the various stations, which will, I doubt not, sooner or later, help to contaminate the water of such places. Dr. Wyllie mentions the objections to the trench system, which, he thinks, press for a change to permanent latrines. Surgeon-Major Straker proposes to substitute a water sewage, which would, probably, be the better plan, could it be effectually carried out. The earth poudrette when dried has been proved to possess but little agricultural value.

Conservancy.

43. One difficulty in connection with latrines for natives may be got over by adopting the plan in use at Jubbulpore and Cawnpore, mentioned by Deputy Surgeon-General Maitland, which plan, it would appear, has been improved upon by Lieutenant-Colonel Finch, Executive Engineer, Poona.

Trench Latrines.

44. Trench latrines are in use in some regiments, and work well. There should be in every station a perfect conservancy system; otherwise the ground becomes saturated with sewage and the wells polluted. This saturation, to my mind, would account for much of the unhealthiness of old cantonments.

Water.

45. The water-supply is generally reported to be good. The Deputy Surgeon-General, Poona Division, notes, that since the introduction of that from Kharakwásla there has been a great decrease in the number of cases of bowel complaints. The supply at Mhow becomes very scanty in the hot season, and Deputy Surgeon-General Wyllie reports the tracing of enteric fever to the use of water from one of the wells. That at Mahidpur is reported unfavourably upon, the supply being inadequate and the quality indifferent. At Disa also Dr. Barry reports the water to be impure, and the amount of albumenoid ammonia found in the wells in the lines would, on Dr. Parkes' theory, make the water non-potable; but there appears to be some doubt about the presence of albumenoid ammonia in water being as injurious here as it is said to be in Europe. Medical Officers are engaged in analysing the water in turn at the various stations, and when their returns shall have been submitted it may be found practicable to improve the supply. In places, such as Bombay, where the water is kept in tanks, these should be under cover.

Water pollution.

46. We are aware how the natives, though fully appreciating good water, become very careless as to obtaining it pure or not polluting it: for instance, at Sirur it is reported by the Medical Officer of the Poona Horse that the cultivation of melons is carried on in the bed of the river, ordure being used as manure.

Filters.

47. I recommend that Macnamara filters should be supplied to all hospitals, and, if possible, to regimental lines also.

Food.

48. With the exception of vegetables at Mhow the usual articles of food have been abundant, of good quality, and fair in price. No matter in what station any regiment may be located, there will always be a number of the sepoys who are under-fed, either from a desire on their parts to save money, or from having either large families of their own, or relatives quartered upon them to feed. In connection with this subject Surgeon-Major D. Simpson recommends that sepoys going to Aden should not be accompanied by their wives and children, in order to insure the consumption by themselves of the ration allowed by Government to them, and thus, in as far as possible, prevent any appearance of scurvy from which so many suffer. Potatoes might be obtained from Malta, and issued to the troops at Aden at a small charge within the compass of their pay, and at most stations sepoys' gardens might be established and encouraged.

Sepoys' Gardens.

Milch Cattle.

49. It would also seem desirable, milk, entering, as it does, so largely into the diet of the sepoy and his family, that a portion of ground in the vicinity of the lines should be allotted to the grazing of the cattle from which the milk is obtained, the animals being kept in the bazaar lines under proper surveillance. The propagation of typhoid fever by means of milk has been distinctly traced and proved by Dr. Murchison in London, and, very recently, by Dr. Duncan in Glasgow. The care of the cattle has an important bearing upon health, as the animals even drinking from stagnant pools is the cause of their milk being filled with living organisms.

Clothing.

50. This, and its unsuitableness to the sepoy, was remarked upon by me in the report for the previous year.

Duties, &c.

51. These have not been heavy in any corps, except the 8th Regiment at Poona, where the sepoys were engaged in building lines—a kind of work to which they are unaccustomed, and which appears to have an injurious effect on their health.

Athletic Exercises.

52. In only a few regiments are there gymnasia. It would be well were athletic exercises, under the European Officers, to form part of the routine duties. I believe this would, if carried out in moderation, improve the physique of the men, and it certainly would form an agreeable change to the monotony of the usual drill parade.

Lock-up Rooms.

53. There have been no complaints regarding these, which, generally, are of sufficient capacity and well ventilated.

Marches.

54. These have been but few during the past year. They are almost invariably found to be favourable to the health of the men, though Surgeon Hughes reports the contrary to have been the case in the 14th Regiment.

Hospitals.

55. Most of these are in good order and well adapted to their proper purpose. At Poona a new hospital is under construction for the 8th Regiment, and where further improvements or requirements are necessary such will be brought to the notice of Government.

Kerosine Oil in Hospitals.

56. After the first outlay for lamps the substitution of this article for cocoanut oil would, in my opinion, effect a great saving. Though on comparing the standard allowance for barracks in Bengal with the price of oil here I find the difference in favour of the latter, I cannot but think the quantities there laid down are unnecessarily large,—five and ten ounces per night; the relative cost might be practically tested by the Commissariat Department.

Improvement of Sepoys' Lines.

57. The numbers in hospital, with consequent loss of service to the State might, I believe, be considerably lessened by the improvement of the sepoys' lines in, probably, nearly every station, many of them being low, damp, and ill-ventilated. The huts should be properly constructed, both as regards accommodation and ventilation, and should be raised on plinths. A greater concern for the sepoy would, I feel sure, be compensated to the State by more efficient service and fewer pensioners. Dr. Wyllie considers the new lines at Rájkot may be accepted as models for future structures of the kind. But it is believed that Government is having these improvements gradually carried out.

Rain-fall.

58. I am not aware that this has been either scanty or immoderate in any of the stations, with the exception of Mhow, where less fell than usual, and in Sind where a larger quantity

than ordinary is reported, but in neither case has it exercised an influence prejudicial to the health of the troops.

Vaccination and Revaccination.

59. These have been carefully carried out. Of the latter there have been but few cases for want of subjects, a good proof of the careful supervision of the Medical Officers. Dr. Maitland writes: "So far as it can be ascertained it is believed that not a child, save those of such tender age as to render the operation inadvisable, remained in the lines at the close of the year unprotected." But revaccination in Sind meets with great opposition, and the operations, consequently, are few. This is in marked contrast to the civil population.

Epidemics.

60. I am happy to be able to report that only one case of cholera occurred in a sepoy of the 19th Regiment at Sholapur; he recovered. Of small-pox there have been only a few isolated cases, with one death, in the Northern Division, where the disease occurred in the modified form at Ahmedadad and Rájkot, as well as in the Mhow Division, but most of the cases appear to have occurred in the 12th Native Infantry at Dharwar. This shows how well our troops are protected by vaccination, as it is known the disease prevailed to a considerable extent in the Ahmedabad Zillah and in Kattywar.

GeneralHealth and Physique.

61. This varies much in different corps, and is in a measure due to the original selection of the recruits, which in some regiments must be faulty, as, while in these the physique is below par, in others it is good. This must point to the want of proper care in the choice of men. On this subject I beg to refer to my remarks at para. 18, p. 3, of last report.

Visual Examination of Recruits.

62. This leads me to remark on defective sight as a cause of rejection of some recruits, and which might be obviated were the recommendation of Surgeon DeTatham, of employing test dots at the homes of the recruits, adopted, which I would respectfully urge, as the cost would be so trifling.

Invaliding.

63. I believe the majority of men invalided for pension will be found to be between fifteen and twenty years' service. This is to be accounted for by the faulty system of choosing recruits before mentioned, but chiefly by the fact of there being no further increment of pension until forty years' service, thus leading to the great malingering which yearly goes on, against which the Medical Officer is almost powerless. The pay of the sepoy is not comparable to the wages now earned in civil life. A strong comment on our system of pensioning may be based on the fact that out of 509 invalided in the Northern Division, 196 were for old age and debility and 77 for rheumatism, the first and second in numbers on the list of causes, and yet most of those pensioned are said to be men of between fifteen and twenty years' service only. In my opinion this is a subject which calls for the particular attention of Government. During the past four years the number of invalids has increased yearly from 3·12 in 1871 to 3·98, 4·35 and 4·60 in 1872-3-4 respectively.

Different modes of reckoning the Sick.

64. There must be something in the system of reckoning the numbers of the sick to account for the great difference between those of the 20th and 21st Regiments located in Bombay, under almost identically similar circumstances, which are, respectively, 637* and 373. This cannot be due to climate, though the lines of the former corps are in an unhealthy situation, nor to sickness contracted prior to coming to Bombay. In some regiments it is, I believe, the custom to retain

* This does not, of course, include the 19 admissions of the detachment at Jinjira.

men in hospital for a few days without including them in the morning report—except, perhaps, as "under observation"—and without entering their names in the register of diseases, these being placed in this only should their diseases prove of a more serious nature; otherwise they are permitted to return to duty without having appeared in the list of sick. It is very evident that such a system must render the returns, where the comparative standard of health in different regiments is shown and compared, fallacious. Another source of fallacy in the returns is the excusing from duty, for a few days, men suffering from slight ailments not necessitating a residence in the hospital. It should be the universal rule that every man who is either retained in hospital for treatment or excused from duty an account of ailment, and allowed for special reasons to remain in the lines, should have his name entered in the hospital register. This being done, the records of the various regiments may then be fairly compared.

Long Leave.

65. The system of granting this, as in former years, is no longer necessary by reason of the facility of travelling to most places; and a sepoy instead of being permitted to proceed to his native village, where he, in most cases, wastes valuable time without medical aid, should be transferred, as recommended by Deputy Surgeon-General Johnstone, to a regimental hospital at the station to which it may be considered desirable to send him for proper treatment.

66. With the view of having the annual report for 1874 a standard for reference in regard to all important points bearing on the health of the army, I issued the following form for the guidance of Medical Officers, and desired them to draw up their reports arranged under the subjects mentioned in it. Speaking generally, I am well pleased with the result. Future reports will not require to be so full of details regarding fixed conditions.

67. At the end of this report will be found the usual figured statements, which give every kind of information regarding the health, &c., of the troops:—

1. A general statement of sickness, mortality, &c., arranged by divisions.

2. A summary of the statistics of the year 1874 compared with the four preceding years.

Appendix I.

Classification of diseases according to the new nomenclature, comparing 1874 with 1873. The grand totals give a comparison of four years.

Appendix II.

The health of the troops at the various stations, comparing 1874 with 1873.

Appendix III.

An abstract comparative statement showing the statistics of divisions.

I have the honour to be,

Sir,

Your most obedient Servant,

WM. THOM,

Surgeon-General.

Form of Annual Report for Regimental Medical Officers.

1. Location and Movements of Corps.
2. Detachments.
3. Topography and Physical Geography. { The Soil. / Water. / Drainage.
4. Effects on Climate.
5. Lines. { Available space. / Ventilation. / Bazaar. / Neighbouring villages. / Drainage. / Tanks.
6. Conservancy and sanitary arrangements.
7. Water-supply. { Imperfections. / Sources of impurity. / Suggestions regarding.
8. Food, quality of, and whether abundant and cheap.
9. Clothing.
10. Duties, and their effect on health.
11. Exercise, amusement, and occupation.
12. Lock-up Rooms and Cells.
13. Marshes.
14. Hospital and its surroundings.
15. Ventilation.
16. Overcrowding.
17. Accommodation and Defects. { Improvements. / Requirements. / Recommendations.
18. Conservancy.
19. Hospital Water-supply.
20. Sickness,* Mortality, and Invaliding.
21. Principal causes of Sickness.
22. Do. do. Mortality.
23. Mortality according to Race.
24. Influence of Rain-fall.
25. Epidemics.
26. Vaccination and Re-vaccination.
27. General health and physique of the Men.
28. Treatment of disease when special.
29. Special Observations.
30. *Resumé* of the whole.
31. Education of Medical Pupils, how often instructed weekly, and on what subjects.

* To embrace all the varieties of disease treated, but especially fever, dysentery, and hepatitis.

N.B.—Cases are not to be given in the body of the Report, but are to be added in an Appendix.

A SKETCH

OF THE

MEDICAL HISTORY OF THE NATIVE ARMY OF BOMBAY

FOR THE

YEAR 1874.

[The Regiments are placed as they stood in the Army List on the 1st July 1874.]

PRESIDENCY DIVISION, ADEN, AND BOMBAY MARINE.

Average strength present during the year, Infantry ..... 3,343.
Average daily sick per cent. to the average strength..... 3·97.
Ratio of mortality per cent. to the average strength ..... 0.95.

H. M.'s 21st Regiment N. I., or Marine Battalion.

BOMBAY.—Surgeon-Major MILLS, in medical charge; Strength, 546.

Location and Movement of Corps.

1. The head-quarters and main body of the regiment have been stationed in Bombay during the whole year.

Detachments.

2. The following detachments have been on duty:—Baghdad 10, Bushire 10, Bassadore 12, Gun-boat "Hugh Rose" 10, Steamer "Dalhousie" 8, Gun-boat "Quangtang" 8, "Constance" till 4th July 1874, 8, "Abyssinia" 8, "Magdala" 8, (Gun-boat "Comet" supplied from Baghdad Detachment).

Topography and Physical Geography.

3. It would be impossible to include in the limits of an annual report a detailed account of the topography and physical geography of the Island of Bombay; and that part which more particularly concerns the regiment, viz., the neighbourhood of its own lines, has been so often reported on by myself and others that repetition seems unnecessary.

Effects on Climate.

4. The effects of the above on the climate of Bombay are too well known to require further notice in this place.

Lines—available Space.

5. *a.*—The lines of the regiment occupy an irregular space measuring 206 yards from east to west and an average width of 132½ yards from north to south—this area including also the hospital, quarter-guard, school, &c.

Ventilation.

b.—The huts are built in blocks running from east to west, with broad streets crossing at right angles. The prevailing wind being from the west, and south-west, and north-east, ventilation is secured by this arrangement, aided by the fact that the lines are quite open on the eastern and southern sides, and have only a slight obstacle to the flow of the sea breeze on the western side.

Bazaar and neighbouring Villages.

c.—There is a very small regimental bazaar, consisting of a few Bunnias' shops, within the lines, but the bazaar generally consists of the whole native town of Bombay. It is, however, only in one direction that this approaches the lines, viz., on the north side, where there is first the old Scotch burial-ground (now closed) and the crowded quarter of Dhobee Talao and Sonapur.

Drainage.

d.—The natural drainage of the lines is very good from their standing over a deep substratum of sand, and this is aided by cut-stone surface drains in the middle of each street uniting in a large drain at the west side, by which water, &c., is carried into the sea.

Size of Huts.

e.—The huts occupied by the privates are very small, the dimensions being 14 feet long by 4½ feet broad, giving a superficial area of 63 feet, with a height of 5 feet 9 inches to the eaves, or cubical contents of about 500 feet, and there is no difference in the huts occupied by married men with families and single men. Those occupied by havildars are 14 feet square and 5 feet 9 inches high, and those of the native officers are 23 feet square with the same height as the others.

Plinths.

f.—The huts are well raised on plinths, but the eaves are so narrow in most of the blocks that during the rains the drip falls close to the walls, and soaks through to the floors, making them often very damp. (See para. 29, *c.*)

Tanks.

g.—There are no tanks, properly so called, in or near the lines.

Conservancy and Sanitary Arrangements.

6. There are no latrines in the lines; both men and women have to go to the public necessaries at Sonapur, a distance of between one-fourth and one-third of a mile. This is an undoubted hardship, and must often lead to practices offensive to sanitary regulations. There is no doubt that the cut-stone bathing places in the huts, which are in connection with the before-mentioned surface drains, are used as urinals by the women and children, and this it would be impossible to prevent. Sweepers are kept in each company by whom all solid refuse is removed to a box at the north-west corner of the lines, which is emptied daily by the municipal carts, and the drains are flushed and swept down twice daily.

Water-supply.

7. The water-supply is abundant and excellent in quality; for drinking purposes it is obtained from Vehar. Two large cast-iron tanks are placed in a central position from which water can always be got, and several large wells in and near the lines give an unlimited supply for washing and bathing. Until the introduction of the Vehar water in 1855 drinking water was obtained from this source, and there is little doubt that at certain times of the year it became of very bad quality and unfit for consumption, a fact that is rendered more apparent from the circumstance that, since its use was discontinued, cholera, which had before been frequent and fatal in the regiment, has entirely ceased.

The state of the Vehar water being publicly reported on by the Chemical Analyser to Government, it seems unnecessary to go into details regarding it here.

Food.

8. In 1872 I furnished a statement of the diets of the men of this regiment, which accompanied my annual report. From this it appears that the food of all castes consists of flour (wheat or bajri) and rice, dall, ghee, meat, fish, oil, fresh vegetables, spices, kokum or tamarind, in varying proportions, and that the cost per man was for Mussulmans, Jews, and Native Christians about Rs. 11-4-0, and for Hindus and Purwarrees about Rs. 10-8-0 per month. This information was the result of very careful enquiry among all ranks and castes; but there is no doubt that the scale laid down was far more liberal than that really used, as the expense of it would more than swallow up the average pay of the sepoy, including grain compensation, leaving nothing to support wives and families, much less more distant relations, who so often live on the unfortunate sepoy, causing him to be half-starved himself and driven into debt. I have reason to believe that the quantity of meat eaten by the low-caste men, who form 72 per cent. of the whole regiment, is very small indeed, that what they do use is refuse of the worst quality, that they supplement it by fish, which is often either salted or stale and bad, and that they use but a very small quantity of fresh vegetables. The Mussulman lives somewhat better, but not as well as he should, those from Hindustan being anxious to save money to send to their homes, and many of the single men saving all they can to spend in dissipation.

Clothing.

9. The temperature of Bombay has such a small daily or, indeed, annual variation that different clothing for different seasons is not required. In the regiment two kinds of dress are worn, the one consisting of the ordinary cloth coat and trousers, the other of a suit of dark-blue cotton cloth, the former being worn for parades, guard, &c., the latter for ordinary drill and fatigue duties. It is peculiar to this regiment and is much liked by the men.

Exposure on Guard.

h.—On only one guard, that at Tank Bunder, are the men on sentry exposed to the sun, and on all they are protected from the rain during the monsoon.

c.—The shoes worn by the sepoys are for the most part supplied to them by Government at a cost of 1½ rupees per pair; they are country-made, hard, and ill-fitting; they are a frequent source of shoe-bites. This would not appear from the returns, as I only admit into hospital very bad cases; to others I am in the habit of giving a few days' shoe-leave, by which the men's services are saved, and the hospital is not filled with trifling cases that really do not require medical attendance.

Shoes.

10. There has been nothing in the duties of the troops during the past year to exercise an injurious influence on their health. The average number of consecutive nights in bed has been very nearly four (exactly 3⅞ths); during the time of the disturbances in February and March this number was temporarily reduced; but in May, June, and July it was increased by several guards being diminished in strength.

Duties and their effect on Health.

During January, February, March, and April companies were engaged in the annual ball practice at Colaba, and in November and December at Bandora, but in neither case did either the locality or the duty they were engaged in, appear to exert an injurious effect.

11. There is nothing particular to notice on this head. The men with few exceptions do not engage in any exercises or amusements, finding the regular duties of the service sufficient to occupy their time; these duties have very much increased of late years since the introduction of the new musketry drill. There are a few who practise the ordinary athletic exercises of sepoys with clubs, &c., and occasionally, but very rarely now, they play at cricket on the regimental parade ground.

Exercise and Amusements.

12. There are two lock-up cells in an open situation, each having an area of 180 feet, and cubic contents of about 1,300. They are ventilated by holes in the doors and a raised ventilator in the roof, and if necessary, on account of great heat or crowding, the solid doors could be left open, and iron-barred doors can be substituted: at no time during the year has there been more than one man in each cell. The occupants of the cells are regularly visited by the 1st Hospital Assistant, or by the Medical Officer if necessary.

Lock-up Rooms and Cells.

13. The only marches have been those of one company at a time to Bandora, a distance of eight miles, for ball practice; these began in November, and six companies have been there.

Marches.

14. The hospital is situated at the south-west of the space, described in para. 5, facing the south, on which side it is quite open, having the regimental parade ground in front of it; on the west it is open to the sea, but this is of very little advantage, as only the end of the building, in which is the dispensary, looks in this direction; on the north is the hospital compound with the subordinates' and servants' houses, and beyond this the lines; and on the east the lock-up cells and the quarter-guard.

Hospital and its surroundings.

The hospital consists of a long building, running from east to west, consisting of a dispensary 26 feet by 10 feet, and of three wards—110, 80, and 20 feet long, respectively, by 20 feet broad—affording accommodation to 42 patients, with 100 feet superficial and 1,717 feet cubic space to each man. On the south side is a verandah running the whole length of the building 10 feet wide, which is used for isolating cases of ophthalmia, scabies, &c., or for putting ordinary cases into to relieve any overcrowding in the wards. On the north side is an open verandah, 5 feet wide, not available for any purpose, unless it be for exercise. The long ward is appropriated to the sick of the Marine Battalion, the next to the lascars and details who are treated in this hospital, and the small ward is used for special cases—native officers or women when it is occasionally necessary to take them in for hospital treatment. In the south verandah a small store-room has been formed at the east end, and in a similar position in the north verandah there is a bathing room fitted with shower-bath, tubs, &c. In the compound there is a dead-house, and also a latrine with five seats, connected with the hospital by a covered way.

15. The ventilation is ample; it is provided for by seventeen large doors and windows on each side of the three wards, and furthermore by large openings below the eaves over every door and window. Besides this there are two very large windows at the east end in the small ward. The south verandah is provided with windows and shutters to keep off rain or sun, but practically does not at all impede ventilation.

Ventilation.

16. The hospital is sufficient to meet the general demand upon its space. At no time during the year have the wards been filled beyond their regulated number, as, when fullest, the use of the verandah has prevented any over-crowding.

Over-crowding.

17. The accommodation, as stated above, is generally sufficient. There is a want of detached or separate wards for diseases that require isolating; but the construction of the building is such that nothing can be done to remedy this defect, and during the time that I have been in charge of the regiment there has never been any necessity for more accommodation, as all cases of small-pox are treated in the Esplanade Pendalls, as would be cases of cholera if they occurred. Should it be found possible, at any future time, to treat the ordnance lascars elsewhere, one or two more small wards might easily be made.

Accommodation and its defects.

18. The Conservancy Department of the hospital consists of three sweepers, by whom the sewage is conveyed to the public latrines at Sonapur. For deodorising and disinfecting purposes liquid carbolic acid is almost wholly used, mixed in the proportion of 1 to 96 of water, and with this the latrines are washed down, and bed-pans, coondahs, &c., thoroughly washed out. A small quantity of Mac-Dougall's powder is kept in store to be used in cases of dysentery or other diseases where it is necessary to use disinfectants round the bed of a patient, but for general purposes the liquid acid is found most efficacious.

Conservancy.

19. Water is entirely obtained from Vehar; there is a stand-pipe in the compound (from which also the hospital bheesties of the 20th Regiment N. I. get their water). The supply for drinking, &c., obtained from this pipe is always ample; but the pressure in the bath-room is so small at the time that it is most wanted, viz., from 7 to 9 A.M., that the shower-bath is practically useless, and the use of the room as a bathing place is only secured by filling two large tubs during the night, when the water is on at full pressure. The construction of a cistern, to ensure the constant use of the shower-bath, has been suggested, but the nature of the roof of the verandah opposes difficulties to this being carried out.

Hospital Water-supply.

20. *a.*—During the year under review 394 cases were treated, of which 21 remained on the 1st January. 373 were admitted; of these 321 were discharged to duty, 38 were sent on sick certificate, 51 were invalided from the hospital, 7 died, and 10 remained under treatment on the 31st December.

Sickness, Mortality and Invaliding. Number treated.

b.—Judged only by the number of cases treated this would appear to have been a very healthy year, the ratio to strength having been 69·8 against 80·4 in 1873, and an average of 107·7 in the previous ten years; but, on the other hand, while the number of cases has been less, their severity would appear to have been much greater, for the percentage of deaths to strength has been 1·2, and to treated 1·8, against 0·5 and 0·6 respectively in 1873 and 1·4 and 1·3 in the previous ten years. Again, the daily average has been 21 against 20 in 1873, when there were 473 treated, and the same ratio would have given 16·6 for 1874; this shows a considerably greater time in hospital for each case. The number of men whom it was found necessary to send on sick certificate has been 38 against 21 in 1873; in 1873, 92 per cent. of those treated were discharged to duty, and in 1874 only 81·5 per cent.

Comparative Health.

c.—The accompanying table will show that while 373 cases were admitted they were furnished by 299 individuals, or 53 per cent. of the strength:—

Re-admissions.

Admitted four times...	...	...	1	=	4
,, three ,, ...	...	...	14	=	42
,, two ,, ...	...	...	43	=	86
,, one ,, ...	...	...	241	=	241
			299		373

d.—The average duration of time in hospital of each case treated was 15½ days.

Time in Hospital.

21. *a.*—First in importance among the causes of admission into hospital, as withdrawing more men from duty than any other form of sickness, will always be fever, and especially that form of it which, whether rightly or not, is entered in the returns as ague. As usual this has caused the greatest number of admissions, viz., 101, but not in as large a proportion as usual; in 1871 it formed 42 per cent., in 1872, 30, in 1873, 37, and in 1874 only 27 per cent. of the whole.

Principal Causes of Sickness. Fever.

b.—The annexed table will show the number of admissions in each month in order of frequency. It is difficult to reconcile the results thus shown with the theory of malarious origin of ague, the greatest

Number of Cases of Fever in each month.

number occurred in May, when the soil is in its very driest condition, and October, when malarious exhalations might be expected to be greatest, presents almost the minimum number: indeed, the consideration of the admissions in each month throws no light on the influence of either temperature or malaria in producing those cases of fever which we commonly call ague, and almost all of which present a certain degree of periodicity; January gives 13 admissions, February 3, April 6, and May 16. Of course no inference of any importance can be deduced from the results of one year in a single regiment, but I think that similar observations on a large scale would be both interesting and useful.

February	3	June	10
October	4	September	10
July	5	November	10
April	6	January	13
March	7	May	16
December	8		101
August	9		

c.—Of the 104 cases treated 10 were re-admissions, and as two men were twice re-admitted the number who actually suffered was 96, or 17 per cent. of the whole strength.

Re-admissions for Ague.

Results.

d.—Eighty-nine cases were discharged to duty, 10 were sent on sick certificate, and 3 remain under treatment.

Treatment.

e.—I have nothing to add regarding the treatment of these cases to what I stated in my report for 1873, except that cinchonidine has been added to our therapeutic agents, but as yet I am unable to speak with any certainty as to its value when compared with quinine.

Remittent Fever.

f.—Four cases of remittent fever were treated, and of these two died: one was admitted in May, (died) one in June. Two were admitted in December on returning from ball practice at Bandora: one died, the other, his own brother, who had been attending him, immediately sickened and suffered very severely, being for some time in great danger; he is still under treatment.

Chicken-pox.

g.—Seven cases of chicken-pox occurred, all of them of a mild character.

Measles.

h.—There was one case of measles among the sepoys, and a few among the children in the lines, all of a simple form.

Rheumatism.

i.—Two cases of acute and 25 of chronic were treated; of the latter 2 were re-admissions. Both cases of the acute form were sent on sick certificate, of the chronic 13 were discharged to duty, 9 were sent on sick certificate, and 3 were invalided. Besides these there were 2 cases of lumbago, 1 of muscular rheumatism; and 1 of gonorrhœal rheumatism that remained from 1873 was sent on sick certificate.

Syphilis.

j.—Seven cases of various forms of syphilis were admitted, and 1 remained from 1873; of these 4 returned to duty, 2 were sent on sick certificate, 1 was invalided, and 1 remained on 31st December.

Lepra.

k.—No fresh case of lepra occurred during the year; the two cases admitted were old cases that had been sent on sick certificate to fill up the time till they had completed their fifteen years' service, and on their return were admitted until a special committee could be assembled. These and one who remained from 1873 were invalided. I am not aware of any case of the disease at present in the regiment, and I have not had any opportunity of trying the gurjon oil.

Scurvy.

l.—Five cases of scurvy were admitted against 8 in 1873 and 17 in 1872; of these 3 returned to duty and 2 were sent on sick certificate, one of whom with two others were subsequently invalided. There is very much less of the disease in the regiment than when I rejoined in 1872.

Diseases of the Nervous System.

m.—Under diseases of the nervous system 1 case of local paralysis, 4 of brow-ague, and 1 of mania were treated; all returned to duty. The cases of brow-ague were treated with hypodermic injection of quinine, which in all cases gave relief. The case of mania arose apparently from visceral derangement, and soon yielded to ordinary treatment, and the man remains quite well.

Diseases of the Eye.

n.—Thirty cases of conjunctivitis, of which 1 remained and 29 were admitted, were treated, and all returned to duty. There were 6 re-admissions, 1 double, so that the number of men treated was 25. In 1873 only 11 cases were admitted; I am unable to point out any reason for this difference in the two years. It may be noticed that 16 out of 29 admissions occurred in April and May, the remainder

being more equally distributed over the other months. One case of iritis and one of nyctalopia were treated and cured. Four cases of chronic disease of the eye were invalided; those being found by the Ophthalmic Surgeon to be suffering from affections not likely to be improved by treatment were not admitted into hospital.

Diseases of the Respiratory System.

o.—Under this head 5 remained from 1873 and 20 were admitted, making a total of 25 against 38 in 1873; but while in the former year this class of disease did not contribute to the deaths, this year it has caused 3 out 7, or 43 per cent. of the whole; of bronchitis there were 3 remaining and only 10 admissions against 20 in 1873; of these 10 returned to duty and 3 were invalided. Of 3 cases of asthma 1 was invalided, 1 case of double pneumonia occurred and terminated fatally, 2 cases of pleurisy were treated and discharged, as also 1 of coryza and 2 of bronchial catarrh. Two cases of hœmoptysis were admitted; one of these arising from advanced tubercular disease of the lungs died; and, finally, a case of pulmonary appoplexy, which terminated fatally in twelve hours. The patient was a man who had been for several years schoolmaster, and whose constitution was entirely broken down by drinking and opium-eating.

Diseases of the Stomach and Intestines.

p.—One case of dyspepsia occurred, 1 case of dysentery remained, and 13 were admitted—total 14 against 20 in 1873. Of these 11 were cured and 2 sent on sick certificate, of whom 1 has returned well, 1 remained on 31st December convalescent. The treatment almost always adopted by me, is to commence with a xxx-grain dose of ipecacuanha, which is generally retained; sometimes this is repeated on the following day. Afterwards, quinine grains iii, ipecacuanha grains ii, opium grain $\frac{1}{4}$, three times a day, generally effects a cure; of course many cases occur in which this simple treatment has to be deviated from, but, as a general rule, it is found sufficient. Eleven cases of diarrhœa were treated and all returned to duty. One case of enteritis, 3 cases of colic, and 1 of constipation complete the number under this head.

Hepatitis.

q.—Seven cases of hepatitis were admitted; of these 1 died, 5 were discharged to duty, and 1 was sent on sick certificate, and on his return was invalided. The one who died had previously suffered from remittent fever and hepatitis on board the S. S. "Dalhousie," whence he was sent to hospital in June, and was discharged to duty in July. In September he was again admitted and died after eight days in hospital with enormous hepatic abscess.

Splenitis.

r.—One case was treated in a man who returned from the Persian Gulf, where he had suffered severely from intermittent fever; he was sent on sick certificate, and on his return was admitted for congestion. The enlargement, however, had become chronic, quite intractable, and he was invalided.

Diseases of the Urinary Organs.

s.—One case of incontinence of urine, 2 of gonorrhœa, and 2 of sympathetic bubo were, admitted, and 2 of the latter were remaining from 1873; all were discharged cured.

Diseases of the Generative System.

t.—One case of hydrocele, 3 of orchitis, and 2 of non-malignant tumours of the scrotum were admitted, of which 1 case of orchitis was invalided and 1 remains under treatment.

Diseases of the Cellular Tissue.

u.—Ten cases of guinea-worm were admitted, of which 2 were re-admissions. After careful enquiry in each case I cannot find that in any instance did the disease originate in Bombay; it is generally traceable to the men's homes in the Konkan, but in one or two cases it appears to have originated in the Persian Gulf. Last year only 6 cases, of which 2 were re-admissions, occurred. Four cases of abscess, 1 of inflammation of cellular tissue, and 1 of non-malignant tumours occurred

Diseases of the Cutaneous System.

v.—Under this head 22 cases of boil were admitted, of which 21 returned to duty and 1 went on sick certificate. Seventeen cases of scabies were admitted, and 1 was remaining; of these 3 were re-admissions—1 double, 17 were discharged to duty, and 1 was sent for change of air, his general health having suffered; some of these cases have proved very intractable. I have latterly found a combination of sulphur and carbolic acid the best application for them. Five cases of ulcer, two of psoriasis, and one of ecthyma make up the list of skin diseases.

Debility.

w.—Fourteen cases were admitted, of which 7 returned to duty, 1 died, 4 were sent on sick certificate, and 2 were invalided. The man who died had been very little in hospital during his whole service, and his condition appeared to result from inanition rather than any special disease. He had passed the invaliding committee in November, and died whilst awaiting the orders of Government. Of the 4 men sent on sick certificate 3 were Mussulmans from Hindustan, a class who, as a rule, suffer severely during their acclimatization in Bombay.

Injuries.

x.—Under this head 33 cases were treated, consisting of burns 3, contusions 11, sprains 12, incised wounds 3, and blistered feet 4. With one exception these injuries were trifling: one a naique, a feeble elderly man, fell down a hatchway on board ship and bruised his ribs and right arm; he was invalided, but this would have been the case independent of the accident. All the injuries recorded have been accidental.

Principal Causes of Mortality.

22. *a.*—I have already noticed the deaths under the various diseases from which they resulted, but they are here collected. From remittent fever 2, pneumonia 1, hœmoptysis (tubercular disease) 1, pulmonary appoplexy 1, hepatitis 1, debility 1, whence it appears that disease of the lungs caused the greatest number of deaths, and next remittent fever.

Deaths out of Hospital.

b.—Besides the deaths mentioned, 3 men belonging to the strength at head-quarters died out of hospital: 1, an orderly naique, dropped dead on the parade ground while returning from the fort. A coroner's inquest was held, and a verdict returned of died of heart disease. One man was drowned while bathing in a tank at Bandora, and one man died while on sick leave in the Konkan. One also, not on the head-quarter strength, is reported as having died in the Persian Gulf.

Mortality according to Race.

23. Of the 7 deaths that occurred in hospital 5 were among Hindus, who form 72 per cent. of the strength, and have furnished 66 per cent. of the admissions and 71·4 per cent. of the deaths; 1 death among the Mussulmans, who form 27 per cent. of the strength, and furnished 33 per cent. of the admissions and 14·3 per cent. of the deaths. The remaining death was of a Jew, that from debility; this was an exceptional case. There are only 4 Jews, or not 1 per cent. of the strength.

Influence of Rain-fall.

24. From the accompanying table it will be seen that the rainy season does not appear to exercise any special influence on the health of the men. The average monthly admissions were 31, and in the four rainy months they averaged 30½. The average for fever is 8½, and the same for the wet months. Neither do rheumatism or dysentery present any excess in these months; this table presents one remarkable feature, and that is the very great number of admissions in the month of May. I can only account for it by the fact that I was away on leave during the whole of that month, and the men may have taken advantage of a strange Medical Officer to get more easily admitted into hospital. The month of July, in which the rain-fall was unusually large, presents the smallest number of admissions in the whole year:—

Months.	Admissions.	Deaths.	Rain-fall.	Fever.	Rheumatism.	Dysentery.
January ...	26	...	...	13	1	...
February ...	25	...	...	3	3	...
March ...	26	1	...	7	2	...
April ...	27	...	...	6	3	2
May ...	68	1	...	16	6	2
June ...	30	...	19·44	10	1	1
July ...	22	...	46·47	5	2	2
August ...	37	...	11·26	9	2	2
September ...	35	2	16·16	10	1	...
October ...	26	...	0·02	4	4	1
November ...	27	2	0·08	10	1	...
December ...	24	1	...	8	...	2
Total...	373	7	93·43	101	26	13

Epidemics.

25. *a.*—No epidemic has prevailed among the sepoys.

Small-pox.

b.—Five cases occurred among the children; of these 2 were treated in the small-pox ward of the Jamsetjee Jejeebhoy Hospital, of whom 1 died; 2 were treated in the Esplanade Pendalls and recovered. One child of a sweeper died in the lines without its sickness being reported until after its death.

c.—The regiment has again enjoyed a complete immunity from cholera; the last year in which any case of the disease occurred in the regiment was 1865, the year in which, as stated in para. 7, Vehar water was introduced into the lines.

Cholera.

26. *a.*—Seventy-six primary vaccinations have been performed; of these 74, or 97·4 per cent., were successful. Twenty-six were under 1 year old, 14 above that age.

Vaccination.

b.—Thirty-six revaccinations among the recruits of the year; of these 8 were successful and 28 unsuccessful. All recruits are vaccinated, whether showing marks of small-pox or previous vaccination or not, and also all children coming into the lines who are so old as not to have been vaccinated within three or four years. The lymph has been uniformly good.

Revaccinations.

27. In my report last year I had occasion to report unfavourably on the general physique of the men, and the remarks I then made would generally apply to the year under review, though I think that, on the whole, there is some improvement. We have again got rid of a large number of worn-out weak men and others disabled by chronic sickness, no less than 51 having been invalided during the year. For some years past great care has been taken in selecting recruits, and those now growing up are for the most part likely to make strong useful soldiers, unless they become broken down by the spare or bad diet before alluded to in para. 8; but special reference must be made to one class of recruits, viz., Mussulmans from Hindustan. For many years none of these men had been introduced into the regiment, but in 1871 they were again enlisted, and at the present time there are 82 sepoys and recruits; of the latter 29 were admitted in the year under review. As noticed in para. 20, under the head of debility, these men suffer severely from the climate of Bombay, though when once acclimatised they seem likely to prove useful soldiers. From the whole regiment 38 men, or 6·7 per cent., have been sent on sick certificate; but deducting 82 Hindustanis from the remainder, 5·2 per cent. have gone, while from the Hindustanis 13 men, or 17 per cent., have gone; but 29 recruits joined in July, and these have not yet began to suffer severely, and none of these have been sent away. Deducting 29 from 82, leaves 53, from whom the whole 13, or 24·5 per cent., have been sent on sick certificate. When first enlisted these are fine, healthy, powerful men; they suffer from ague and rheumatism, both of which often prove very obstinate, inducing great debility, and it appears to me questionable whether the introduction of this class of recruits is likely to prove advantageous.

General Health and Physique of the Men.

28. On this head I have no particular remarks to offer. Cinchonidine has been introduced as a cheaper substitute for quinine, but the trial of it has not yet been sufficient to justify a decided opinion on its merits. Had there been as much leprosy as in 1873 I should have given gurjon oil a trial, but happily the opportunity for doing so has not occurred. The use of chloroform in the extraction of guinea-worm was brought to notice, but in the two cases in which I tried it no beneficial effects resulted.

Treatment of Disease when special.

29. *a.*—I would here call attention to the remarks in para. 30 of my report for 1873 upon the subject of present system of enlistment, pensions, and invaliding; another year's experience and further opportunities of learning the views of others whose opinions are entitled to more consideration than my own, only more strongly convince me that a radical change is absolutely necessary for the well-being of the native army.

Special Observations.

Pensions and Invaliding.

b.—One other point I desire to call attention to, viz., the injury that occurs to the health of the men who are stationed in the Persian Gulf. The detachments leave Bombay in March or April and return in May and June; a large number of them invariably suffer from fever, splenitis, rheumatism, &c. I have no doubt that this service would be found far less trying could the relief be effected every six months instead of annually, say in April or May, October or November.

Period of Service in the Persian Gulf.

c.—I had occasion in July to call attention to the very damp condition of the huts in many parts of the lines, and to recommend that during the rainy season the eaves of the huts should be carried out beyond the plinths by means of jhamps on both sides of the streets, as is at present done only on the side facing the prevailing monsoon winds. The Brigadier-General Commanding visited the lines, and it is to be hoped that some plan will be carried out for affording greater protection, than has hitherto been given, for the future; attention was at the same time called verbally to the condition of the regimental parade

Damp condition of Huts and Parade Ground.

ground, on which during heavy rain water lies stagnant for many days together, and from which an offensive smell of decaying vegetable matter often emanates, though I cannot directly state that any injury to health has been traced to this source.

Sonapur Drain.

d.—For several years past it has been found necessary to allude to the nuisance caused by the Sonapur drain; I wish I could say that this was no longer the case. I regret to state that it is now as great or even greater than ever.

Instruction of Native Medical Pupils.

30. No fixed time has been adopted for this purpose, but as opportunity offered the medical pupils have been instructed in their profession, more especially in anatomy and treatment of diseases, and steps have been taken to advance them in their knowledge of English by examination into the meaning of words, and making them write copies and explain them.

Resumé.

31. From the consideration of the details given in the preceding report and the accompanying table it will be seen that in general health the year 1874 has been a decidedly favourable one, the proportion of treated to strength having been less than in any one of the preceding ten years excepting 1870; but, as I have already pointed out in para. 20 *b*, this favourable comparison is not equally borne out in other respects. Three of the deaths may be considered exceptional, not arising from the ordinary diseases to which the men are liable; but, even if these were deducted from the total, the remainder would exceed the number in several of the preceding years, as 1867, 1869, 1872, and 1873. I have nothing to add to the remarks that I have made under each head in detail; but, although not directly affecting the year under review, I cannot help drawing attention to the remarkable difference in the health of the regiment in the first and second halves of the period shown in the annexed table. In the first five years from 1864 to 1868 from an average strength of 593 there were treated (exclusive of cholera) an average of 817 cases, or 137·7 per cent., and in the second term, from 1869 to 1873, from an average strength of 606 there were treated 473 cases, or 78·1 per cent., and this improvement still continues. I am unable to point out any sufficient cause for it. The introduction of the excellent Vehar water occurred in 1865, and it was not until three years after that the marked improvement took place. In conclusion, I must regret that I have not been able to make my report more interesting in a professional point of view, but all who have had charge of a native regiment know how very few are the cases that present any point of interest compared with those of the merest routine.

Table showing the Number of Treated, Deaths, Strength, and Daily Average of Sick in Hospital of Her Majesty's 21st Regiment N. I., or Marine Battalion, during the eleven years from 1864 to 1874.

		1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	Average.	1874.
Strength		581	625	568	569	625	658	633	575	563	588	598	564
Average Daily Sick		28	37	24	24	23	15	15	20	19	20	22	21
Treated ...	Cholera ...	21	13	...	...	...	...	...	...	...	...	3·4	...
	Other diseases...	798	938	758	755	787	515	408	465	502	473	440	394
	Total	819	951	...	...	...	...	...	...	...	...	643	...
To Strength.	Cholera ...	3·6	2·4	...	...	..	...	...	...	...	...	0·6	...
	Other diseases...	137·2	150	133·4	132·7	125·9	78·3	64·4	80·8	89·1	80·4	107·2	69·8
	Total	140	152·4	...	...	...	...	...	...	...	...	107·7	...
Deaths ...	Cholera ...	15	4	...	..	...	...	...	...	...	...	1·9	..
	Other diseases...	8	19	8	1	9	2	5	8	3	3	6·6	7
	Total	23	23	...	...	...	...	...	...	...	...	8·6	...
To Treated...	Cholera ...	71·4	30·7	...	...	...	...	...	...	...	...	5·6	...
	Other diseases...	1	2	1	0·1	1·1	0·4	1·2	1·7	0·6	0 6	·97	1·8
	Total	2·8	2·4	...	...	...	...	...	...	...	...	1·3	...
To Strength.	Cholera ...	2·6	0·7	...	...	...	...	...	...	...	...	·33	...
	Other diseases...	1·4	3·6	1·4	0·1	1·4	0·3	0·8	1·4	0·5	0·5	1 1	1·2
	Total	4	4·3	1·4	..	...	...	...	...		...	...	...

Staff and Details attached to Her Majesty's 21st Regiment N. I., or Marine Battalion.

General Health.

1. The average strength during the year has been 31, or 12 less than in 1873; during the first nine months of the year the average was 12, during the last three months 87, in consequence of men being assembled for the annual invaliding committee. Of those not sent specially for this purpose the largest number were from the 2nd Regiment N. I. (Grenadiers) at Aden; this would naturally be the case, as all of them, going and returning to and from sick leave or furlough, pass through Bombay, added to which every man who has got away from Aden seems to do his best not to return to it. There were 31 admissions, or 100 per cent., and 3 remained from 1873—total 34 treated. Of these 19 returned to duty, 2 died, 1 deserted, and 12 were invalided.

Principal Diseases.

2. Eleven cases of ague were admitted, and of these 9 returned to duty, 2 were invalided; 6 cases of chronic rheumatism—2 discharged to duty, 4 invalided; 3 cases scurvy—2 duty, 1 invalided; 2 dysentery, both discharged to duty; 2 debility, of which 1 was discharged and 1 died.

Deaths.

3. Two deaths occurred, one from anæmia in a havildar of the 2nd Regiment N. I. (Grenadiers) who arrived from Aden in a state of extreme debility and died two days after admission. The other was from debility in the case of a sepoy of 9th Regiment N. I. (Madras); he arrived in Bombay on his way to Hindustan on furlough, having walked all the way from Cannanore; he had spent all his money, and was completely exhausted from fatigue and hunger. Neither food nor medicines had any effect upon him, and he gradually sank, and died six weeks after admission.

Deserter.

4. The case of desertion referred to in para. 1 was a man of the 2nd Regiment N.I.; he had already been tried for malingering while on field service at Aden, and in consequence of some informality was acquitted and afterwards got leave on furlough. As soon as he found that his previous history had become known he left the hospital at night, and has probably got away to the Punjab, his native country.

Lines.

5. The details continue to be housed in a portion of the Esplanade Pendalls, in an open healthy situation.

Summary of Cases.

6. I must again call attention to the frequent neglect in sending summaries of cases with men going on sick leave, and to the inconvenience resulting therefrom.

20th Regiment Bombay Native Infantry.

BOMBAY.—Surgeon H. DETATHAM, in medical charge; Average Strength, 628·9.

Location and Movement of Corps.

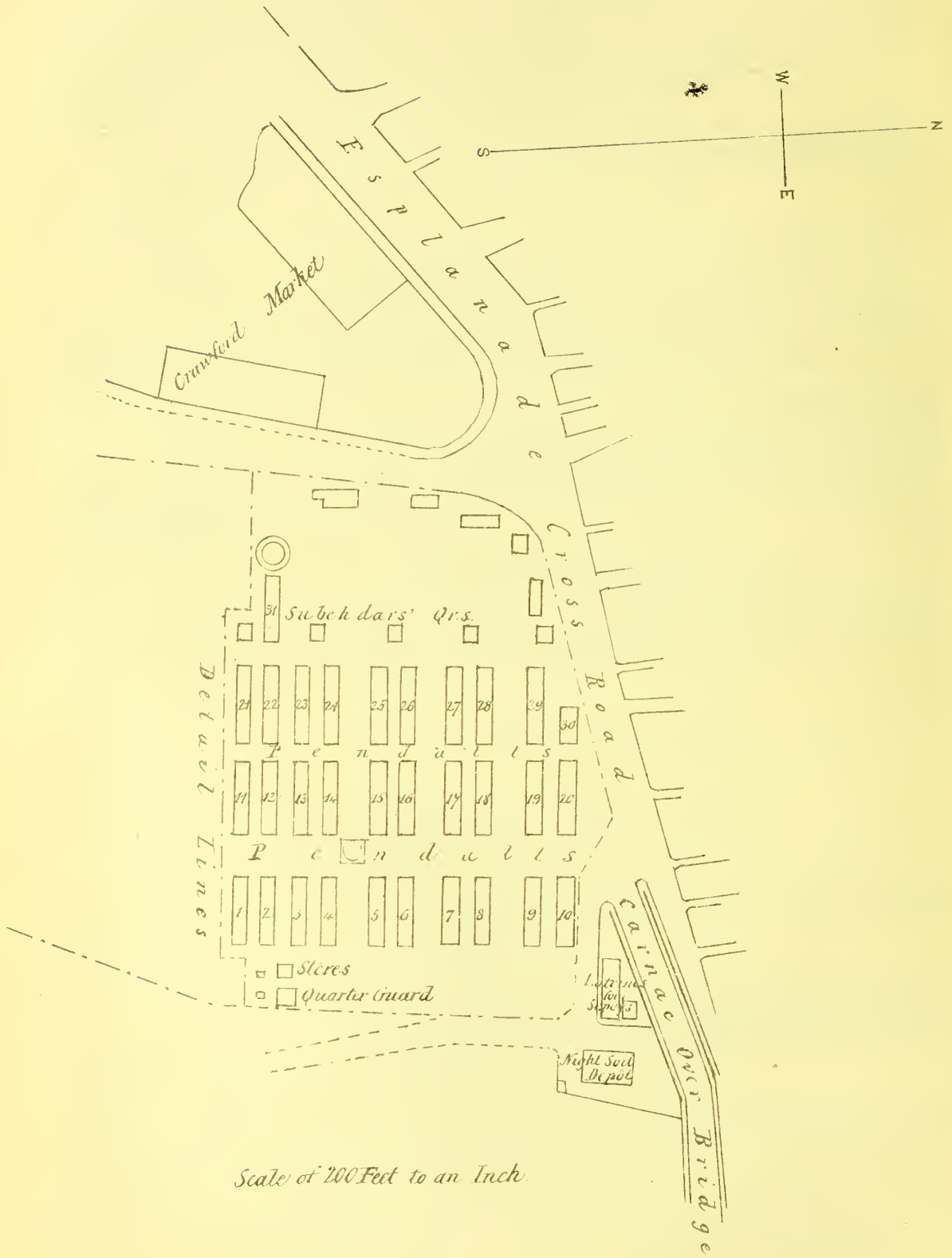
The regiment has been stationed at Bombay throughout the period under report, no movements having taken place during the year.

Detachments.

At the beginning of the year a detachment, consisting of 100 men under a European Officer, was stationed at Bhuj, having remained there since the previous November, when the head-quarters proceeded to Bombay; the men rejoined head-quarters in good health on the 31st of January, bringing with them only two sick.

The regiment has furnished throughout the year a small detachment of 16 men to Jinira: this has been relieved *twice*, the dates of departure and of rejoining being as follows:—

Departed.	Rejoined.
20th November 1873	8th June 1874.
6th June 1874	27th December 1874.
24th December 1874	
Station	Bombay.



Scale of 200 Feet to an Inch.

These detachments appear to have enjoyed fairly good health during their stay at Jinjira; they suffered occasionally from attacks of ague, but no cases were sent in to head-quarters' hospital. I examined the men on their return, and they appeared robust and healthy, more so, indeed, than their comrades in Bombay; this was especially the case (speaking generally) with the detachment which returned in *December*, although it furnished *two* admissions into hospital immediately on its return—one for ague and one for boils.

Topography and Physical Geography.

The topography and physical geography of Bombay being so well known, and so fully described in numbers of published works, I have not thought it necessary to offer any remarks under this head, as I should have considered it my duty to furnish in the case of an up-country station.

Effects on Climate.

The most important respect in which the climate of Bombay differs from that of the Mofussil is, of course, in the degree of humidity of the atmosphere, and the effects of this are greatly felt by those who have for some years previously been residing in a dry climate,—the moist air of Bombay having a decidedly relaxing effect upon the new-comer.

The following table shows the average temperature and the rain-fall during the year:—

1874.	Temperature.			Rain-fall.	
	Max.	Min.	Mean.	Inches.	Cents.
January	87	75	81	...	...
February	87	76	81	...	...
March	88	80	84	...	...
April	91	83	87	...	...
May	92	87	89	...	...
June	91	81	86	17	38
July	87	77	82	41	34
August	85	77	81	9	84
September	87	78	82	15	22
October	91	85	88	...	2
November	88	82	85	...	...
December	84	80	82	...	...
Average...	88	80	84	Total 83	80

Lines.

From a plan of the lines, which I append, an accurate idea of their situation can be formed; they are close to the Crawford Market, which lies to the west of them, and are bounded on the east by the line of the G. I. P. Railway, to the south are the "detail lines," while the north is shut in by the road leading from the Money Schools to Carnac Bridge.

The ground of the line enclosure greatly needs levelling, being very rocky and uneven. I suppose to the stony nature of the soil may be attributed the difficulty that water appears to find in soaking in during the rains, the result being that there is a "*soakage upwards*" *inside* the houses during that season. In the month of July this state of things arrived at such a pitch that the lines were almost uninhabitable, it being next to impossible for the men to find a dry place to spread their bedding on; and in the quarter-guard especially I noticed that a man walking across the room left the print of his boots behind him in the damp ground.

Another great drawback to the present site of the lines is the very offensive smell which pervades them for three or four hours every morning, and which proceeds from the municipal night-soil depôt, situated close to the north-east corner of the line enclosure. I am bound, however, to admit that the smell in question has not had any evil influence upon the health of the regiment; and from the experience of the past year I myself am quite a convert to the belief that the smell of *fresh* night-soil, although loathsome in the extreme to the senses, is not hurtful to health.

Available Space.

There are five native officers' quarters in which the five seniors live, while the remainder of the accommodation for the regiment consists of twenty-nine pendalls, containing twenty rooms each, and one containing ten rooms, making a total of 590 quarters. These rooms average 12 feet long by 10¼ wide, and are 12 feet high in the centre. I find on calculation that (allowing for the sloping roof) each room contains 1,100 cubic feet of space; I ought, perhaps, rather to say that each room *would* contain that amount of space if the side walls were continued up to the roof, but as the partitions between the houses are only 6 feet high, there being free communication above between all the rooms in the same pendall, this estimate *can* only be *approximative*, as the air contained in rooms occupied by single men freely intermixes with, and must, of course, have its oxygenating properties impaired by, the air of any room in the same pendall which is occupied by a family. The rooms are distributed as follows:—

Occupants.	Rooms.
10 native officers...	32
261 non-commissioned officers and sepoys with families	261
374 single men	263
31 followers, including hajams, bheesties, pensioners, lohar, &c. ...	32
1 musjid	2
	Total 590 rooms.

From the foregoing statement it will be seen that only about two-fifths of the single men enjoy a quarter to themselves, the remainder being obliged to lodge two in a room. In the first case a man enjoys 1,100 cubic feet of space, and in the second only 550, the *average* number of cubic feet to each single man being 773; but, as I said before, this estimate *can* only be approximative, the air of *all* the rooms in one pendall being so freely intermixed.

With respect to the *married* men, the amount of space enjoyed by each person is, of course, much less; this is shown in the following calculation:—

Number of *married* men, or of men with mothers or sisters living with them in the lines (on the 24th December)	261
Number of women over ten years of age	316
Number of children	310
Total	887 persons occupying
261 rooms containing	
1100 cubic feet in each.	

887)287100(323½ average number of cubic feet of space per person.

On calculating the amount of space per head *throughout* the lines, including native officers, sepoys, women, children, followers, &c., I find that the average is about 497 cubic feet for each person.

Although the accommodation provided for the regiment is certainly scanty, I am not prepared to say that any great extent of over-crowding exists, as far as the number of persons occupying each house is concerned, but I think there can be no doubt that the ground on which the lines stand is much too confined when the number of persons living on it (amounting to nearly thirteen hundred) is taken into consideration, the streets between the blocks of huts being, as a rule, much too narrow.

Some of the pendalls being very much dilapidated have been reconstructed by the Public Works Department during the year; seven new ones have already been completed, and estimates for the rebuilding of seven others have been forwarded for sanction.

The *quarter-guard* consists of one room 15 feet 9 inches square and 10 feet high, with a verandah round it 7 feet in width. Two corners of this verandah are *enclosed* to form "lock-up rooms" and will be mentioned under that head. The centre room of the quarter-guard contains 2,480 cubic feet of space, and, as a rule, there are *eight* men occupying it at night; they, therefore, enjoy only 310 cubic feet each and in the event of one or more prisoners being confined in the guard, even this small allowance of breathing space would, of course, be diminished. However, as some of the sepoys generally lie in the verandah, there is a more liberal share for those who remain inside. The building is not raised from the ground, and is consequently very damp

during the rainy season: in my sanitary report for the month of July I called attention to this matter, and recommended that the *floor* of the guard should be covered with chunam; no steps have as yet been taken, however, to remedy the defect in question.

The *school* is a long low building very deficient in ventilation, and, I should say, very unsuitable to the purpose for which it is intended. Its measurements are—length 47 feet, breadth 14½ feet, height of side-wall 6¾ feet; it contains 6,245 cubic feet of space, and the average number of persons occupying it at the same time is 50, which gives only 125 cubic feet of space to each individual.

I should think it was impossible for tuition to be attended with any very brilliant results where the amount of breathing space afforded is so very limited.

Ventilation.

There is no system of ridge-ventilation in the roofs of the pendalls, nor are there any openings for the exit of foul air, except the numerous *chinks* and *crannies* which always exist in a "cutcha" built building. As already mentioned, the upper part of each pendall is devoid of partitions from one end to the other, so that there is free intermixture of the air of different rooms.

The ventilation of the streets between the pendalls is not so good as it might be; this is due to some of them being so narrow, but on the whole the breeze permeates freely through the lines and carries off such effluvia as are locally generated.

Bazaar.

The regimental bazaar is kept clean and in a satisfactory condition from a sanitary point of view; it consists of 27 small houses or rooms situated at the western side of the lines' enclosure. The following shopkeepers and others (34 in number) carry on their respective trades here:—

Bunnias	4
Sonars	2
Dhobies	2
Shroffs	2
Dirzees	4
Dyers	2
Mochees	4
Gowlees	2
Chowdree	1
Peons	2
Line-sweepers	9

The families of the above, numbering 50 women and children, make up a total of 84 persons living in the regimental bazaar.

Drainage.

The surface drainage of the lines' enclosure generally is fairly good, but there is much room for improvement in the drainage of individual houses: three of the broader streets have an open central drain (not, however, running throughout their whole length) into which tributary drains from the several houses discharge their contents. It would be well if this system were applied to all the streets, as from some of the houses (especially those occupied by married men) dirty water, urine, &c., is allowed to run out and soak into the soil in front of the house, or in some instances to *collect* in holes outside covered with stone flags, and which are nominally cleaned out every day, but which if left uncared for, as is sometimes the case, become very offensive. At his inspection of the lines towards the end of December the Deputy Surgeon-General noticed this state of things, and subsequently in a letter to the Commanding Officer recommended that earthern "ghurras," which can be removed every day, should be placed in these holes to receive the refuse-water from the interior, and that no collection in the holes themselves should be allowed.

Tanks.

There are no open *tanks* in or near the lines: there are two *wells* in the lines, the water from which, being a little brackish, is only used for bathing and clothes-washing purposes. I have not been able to trace the occurrence of any skin affections, or other contagious or parasitic diseases to the use of this water, and, therefore, conclude that it is not in any way hurtful to health.

Conservancy and Sanitary Arrangements.

There are *nine* line-sweepers employed for the purpose of keeping the lines clean and free from rubbish, and, as a rule, this has been well done, although the defects in the house drainage already mentioned make it very difficult for anything like a *perfect* sanitary condition to be maintained; indeed

I think, such a consummation would be almost impossible with such a small establishment of line-sweepers, and in such lines as those now occupied by the regiment, although every effort is made by the Quater-Master and those under him to keep the lines in as good a sanitary state as possible.

The latrine accommodation is good: twenty-eight seats are provided for men and the same number for women. In each latrine there are *four* water-taps for flushing the latrine; this is done several times daily, the soil passing into a drain which joins the municipal drain, and is thus carried away to the sea.

Whenever I have visited the latrine (and I have frequently done so unexpectedly) I have always found the place to be well kept from a sanitary point of view.

Water-supply.

The regiment is supplied with drinking water from the Vehar Lake; this is received through pipes into *eight* covered iron tanks, which are raised on brickwork and placed at one end of the lines, *four* of these being reserved for the Mahrattas, Purdasees, and Mussulmans of the regiment, *two* for the Purwarrees, and *two* for the Mochees. I have measured these tanks, and find that they hold 780 gallons each, and the supply being constant no deficiency of any kind has been experienced during the year. I have not analysed the water myself, as it has already been so frequently reported on by the Government Analyser; but, as far as taste and appearance are concerned, it is everything that can be desired, and I am not aware of any local sources of impurity, unless it be the coating of red paint which is applied to the inside of the tanks, and which is done, I imagine, with a view to prevent the corrosion of the iron. I must admit, however, that I have not observed the symptons of lead-poisoning in any of the men admitted into hospital.

Suggestions.

a—I would suggest that the insides of the tank, instead of being painted, should be protected by being covered with a coating of Portland cement, or with some *vitreous glaze*, as is the custom now in England when iron tanks are used.

b.—I would further recommend that the tanks should be protected from the sun instead of being exposed all day to its glare as they are now: this might easily be done by erecting a thatched shed over them, or, if Government were unwilling to incur this expense, a few young trees of sufficient height to afford shade might be planted in their immediate vicinity.

c.—Another great desideratum is a trough to catch the drippings from the taps and carry the refuse-water into the contiguous surface drain; the absence of any arrangement of this kind causes the ground in front of the tanks to be generally muddy and dirty.

Food.

The lines of the regiment being close to Crawford Market, in which supplies of all kinds and of good quality abound, the sepoys have no difficulty in obtaining anything they may require. The regimental bazaar, too, is furnished with supplies of all the ordinary kinds of food used by the native soldier. I may mention that *grain* of all kinds and *wood* are *cheaper* in Bombay than at Bhuj, where the regiment was stationed during the preceding three years, but *meat* and *milk* are *dearer*.

The following table gives the prices of the different kinds of food in ordinary use by the sepoy. I have calculated them at the number of *pounds per rupee* instead of giving the native measures:—

Wheat flour	20	lbs. per rupee.
Bajri do.	30	,, ,,
Rice	15½	,, ,,
Dhall	17	,, ,,
Ghee	2¼	,, ,,
Salt	15	,, ,,
Milk	10	,, ,,
Firewood	150	,, ,,

Mutton, two annas and six pies per pound.
Potatoes, six pies per pound.

The following table gives an *approximate* statement of the nature and average daily consumption of food used by the sepoys of different castes, with the average cost of one day's diet. As I stated, however, in my report for the year 1870, a sepoy's diet is greatly modified, both in quality and quantity, by his means and the variety of conditions in which he is placed—a man with a large family seldom eating meat except as an occasional luxury, and, moreover, frequently substituting *bajri* for wheaten flour on grounds of economy:—

Diet Table.

	Mussulmans and Punjabees.	Purdasees.	Mahrattas.	Purwarrees and Mochees.
Wheat flour	lb. 1	lbs. 2	lb. ½	lb. ½
Bajri do.	.....	... ..	,, ½	,, ½
Rice	ozs. 8	.....	ozs. 8	ozs. 8
Dhall...	,, 4	ozs. 4	,, 4	,, 4
Ghee	,, 2	,, 2	,, 2	,, 2
Vegetables	,, 4	,, 4	,, 4	,, 4
Mutton (occasionally)	lb. ½	.....	lb. ½	lb. ½
Milk (do.)	.....	ozs. 8	.....	.....
Fish	.....	.....	.....	lb. ½
Curry-stuff		A	sufficiency.	
Firewood	lbs. 3	lbs. 3	lbs. 3	lbs. 3
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Average cost without meat, milk, or fish	0 3 2	0 3 5	0 3 1	0 3 1
Do. with meat, milk, or fish	0 4 5	0 4 2	0 4 4	0 4 1

I regret to say that the use of *meat* has not been at all general among the men since the regiment has been stationed in Bombay; this is partly on account of the expense, but also, in the case of the Mahrattas, on account of an idea they have to the effect that the *mutton* which is killed at Bandora and brought into Bombay in carts is likely to be contaminated by contact with *beef*, either during transit or in the market itself. I believe that there is no good foundation for this supposition, but it is very difficult to eradicate the idea from their minds.

Clothing.

The dress of the 20th Regiment in no way differs from that worn by other native corps, except that during the hot months a *white linen coat* is worn on duty instead of the scarlet tunic; this is much liked by the men, being a very easy dress, and although not, I believe, strictly regulation, might, I think, be adopted in other native regiments with advantage.

The boot used in the regiment is the ordinary "ammunition boot" which, as I stated in my report for 1871, "is an excellent thing *when worn with a sock*, but as a covering to a naked foot is most unsuitable, and seriously impairs the efficiency of a regiment." This fact is sufficiently self-evident even in cantonments, where cases of "*shoe-bite*" are not at all uncommon, but on the march it is only shown more forcibly, and compels one to admit that either a different kind of boot should be introduced, or else the wearing of some covering to the foot *inside* the boot should be compulsory as with European troops.

Duties and their Effect on Health.

During the year 1874 the regiment has been worked much harder than for several years previously, the guard duty in Bombay being heavy. At Bhuj, where the regiment was stationed during the three years from 1871-73 inclusive, the average number of consecutive nights in bed amounted to 7½, but in Bombay the number has frequently been reduced to *two*, and when one company has been absent at Bandora for ball-practice *some* of the men left behind in Bombay have only had *one* night in bed, being on duty every other night.

I cannot say, however, that the duties performed by the corps have had any bad effect upon the health of the men; but with the amount of work they get it is not to be wondered at that the native portion of the regiment looks back with longing eyes to the comparative ease and comfort of up-country life.

Exercise, Amusement, and Occupation.

With regard to *exercise* and *occupation* the regiment finds ample of both in the performance of its daily duties. With regard to *amusement*, a "talim-khana" or gymnastic school was always kept up at Bhuj and also at Disa, but since the regiment has been in Bombay this has been in abeyance, the men having but little leisure or inclination for anything of the kind.

Lock-up Rooms and Cells.

There are no separate cells belonging to the regiment, but there are two small lock-up rooms at the back of the quarter-guard formed by the enclosure of portions of the verandah; each of these contains about 700 cubic feet of space with 95 feet of superficial area, and is capable of accommodating one prisoner: the rooms are provided with windows, which are barred and can be closed when necessary by wooden shutters. The prisoner is sometimes allowed to remain in the quarter-guard room itself instead of being placed in the lock-up room. There have never been more than *two* regimental prisoners in confinement at the same time during the year.

The lock-up rooms are rather small, but the means of ventilation (supposing the windows to be left open) are sufficient to admit of the air being frequently changed.

The ground of the whole quarter-guard building, as has already been mentioned, is very damp during the rainy season, and the lock-up rooms not being provided with raised sleeping places would of course be very unhealthy at that time, although in this respect perhaps not worse than the houses in the lines.

Marches.

No marches have been performed by the regiment *as a whole* during the year, but in the month of January a detachment consisting of 100 men under a European Officer, who had been left behind at Bhuj when the rest of the regiment proceeded to Bombay, marched from Bhuj to Mándvi (a three-days' march), and there embarked in a steamer to rejoin head-quarters, arriving in Bombay on the 31st January.

Hospitals and its Surroundings.

I attach to this report a plan of the hospital and its surroundings, from which it will be seen that the hospital compound is situated at the north end of the Marine Lines, almost abutting on the native town, there being only a small enclosure containing two or three bungalows occupied by subordinates of the Barrack Department between it and the district of Sonapur. The compound itself is very small, extending only a few feet beyond the hospital at each end, and the out-buildings are necessarily somewhat too close to the hospital; but being situated in the *rear* they do not interfere with the free access of air from Back Bay, the direction from which the prevailing wind blows.

The hospital itself faces Back Bay, and consists of one long pendall 200 feet in length, and raised on a plinth of between two and three feet in height; this is divided into four wards, each 50 feet long, 20 feet broad, and 12 feet high (up to the tie beam). There are verandahs *eight* and *ten* feet wide respectively at *back* and *front* of the hospital, and at each angle of the building is a small room 10 feet × 10 feet formed by the enclosure of a portion of the verandah; one of these is used as an office and one as a store-room, while the other two have been used at different times during the year for the reception of *women* of the regiment requiring treatment, and such other cases as required isolation. I have also in the absence of any dead-house used one of them on occasions as a *post-mortem* room.

By placing patients in the verandahs the hospital could in case of need accommodate about 70 patients; but, in the event of the sick list running higher than that, some of the patients would have to be accommodated in one of the vacant pendalls on the Esplanade, or in the old artillery barracks in Fort George, as there is but scant space in the hospital compound for the pitching of tents.

There are *no wards for epidemic diseases* attached to the hospital, and cases of small-pox or other infectious disease are treated in one end of the vacant pendall on the Esplanade.

The *quarters for the subordinates* and second-class servants, although not strictly in accordance with the latest plans sanctioned by Government, giving a separate room to each individual, are fairly commodious; indeed, I think they are better than in most up-country stations.

Immediately in rear of the hospital building is a very convenient and suitable *dispensary* in which all the medicines, instruments, and appliances are kept and the dispensing done.

Marine Lines

20th Regiment Hospital

Hospital Assistants Quarters

Surgery

Cook Rooms

Servants' Quarters

Privy

Privy

Guard Room

Quarter No. 29

Quarters

Conductors

Qrs Nos. 26 27 and 28

North

Marine Lines Road

Scale of 40 Feet to an Inch

There are two *cook-rooms* containing ample space for the number of men ordinarily using them.

The *guard-room* for the hospital guard is also a *suitable building.*

Ventilation. There is no system of ridge-ventilation in the roof of the hospital, but the doors and windows at back and front being numerous, a free current of air passes through the wards, keeping them at all times pure and wholesome.

Over-crowding. The hospital accommodation has proved amply adequate to the requirements of the regiment during the year, and no over-crowding has occurred.

Each of the four wards is calculated to hold *twelve* patients (allowing 1,200 cubic feet and 83½ feet of superficial area to each man), and this number of patients in each ward has not been exceeded at any time during the year; but I have made a practice of accommodating some of the slighter cases in the front verandah of the hospital, thus avoiding the necessity for occupying another ward.

My object in doing this is to economise the consumption of lamp-oil, the opening of another ward involving the supply of an additional light.

Improvements, Accommodation, Defects, &c. It would, I think, be difficult to suggest any improvement upon the *hospital itself.* I consider it in every way a very suitable building, and well adapted to the treatment of the sick; the defect that I have mentioned above, as to the excessive propinquity of some of the out-buildings, is of course irremediable.

Requirements. Under this head I would mention a *new latrine,* a *dead-house,* and a *bathing room,* estimates for which latter have, I believe, already been sent in, but no steps towards carrying out the work have yet been taken.

Recommendations. I have often thought that it would be a very good plan to have in the compound of every native hospital a *brick oven,* in which (by lighting a fire underneath) the clothes, bedding, and especially the *uniforms,* of patients affected with scabies might be subjected to a sufficiently high temperature to thoroughly purify and cleanse them. I am induced to recommend that this plan should be adopted from the many instances I have known of sepoys, recruit-boys, and others being treated in hospital for scabies, going out *cured,* and returning a week or two afterwards with the disease as bad as ever. This, I think, is in a great measure due to the fact that during their stay in hospital their uniform is not subjected to any disinfecting or cleansing process, and the disease is thus re-established immediately on their taking them into use again.

I need, perhaps, hardly point out that the *oven* would also be of the greatest use for disinfecting the body-linen, and bedding of *small-pox* patients before handing over the same to the dhobie, thus *reducing* to a minimum the *risk of contagion,* and greatly contributing towards any efforts at "stamping-out" the disease.

Conservancy. The hospital compound has been kept clean throughout the period under report, and was carefully cleared of all redundant vegetation immediately after the rains.

I wish I could say something in favour of the hospital-latrine, but I cannot conscientiously do so; it is, I think, badly planned and badly situated, being a great deal too near the hospital; this, however, is unavoidable owing to the confined space of the hospital compound. The defect mentioned in my last report (viz., a badly-acting arrangement for carrying off the urine,) remains in *statu quo,* and although carbolic acid is freely used, I have found it very difficult to keep the place sweet and wholesome during the year.

When the regiment first came to Bombay I had some hopes that I might be able to introduce the dry-earth system of conservancy in the hospital latrine, but on further consideration I abandoned the idea.

I would further submit that a latrine containing only *five* seats does not afford sufficient accommodation for the patients and staff of a native regimental hospital: one of at least *twice* the size is necessary, as, in the event of the hospital being full (say, with 70 patients,) there would be, including the hospital staff and extra sepoys in attendance on the sick, about 100 persons using the latrine.

Hospital Water-supply.

There is one well in the hospital compound, but the water from it is chiefly used for washing purposes, a supply of Vehar Lake water for drinking being obtained from a tap in the compound of the Marine Battalion Hospital which is close by. The water is brought by the hospital bheesties in their "mussacks" and distributed to the patients; a "budlah" suspended in the hospital compound is also kept filled with this water.

Vehar Lake water having been already so frequently analysed, I have not thought it necessary to make any fresh analysis of it.

Sickness, Mortality, and Invaliding.

The total number of admissions into hospital has been 637, and these have been furnished by 372 *men* in the following proportion :—

210	men admitted	once,	giving	210	admissions.
98	do.	twice	do.	196	do.
38	do.	3 times	do.	114	do.
20	do.	4 do.	do.	80	do.
1	do.	5 do.	do.	5	do.
3	do.	6 do.	do.	18	do.
2	do.	7 do.	do.	14	do.
Total 372	men treated.			Total 637	admissions.

Of the 637 admissions 265 were *re-admissions*, as shown in the following table :—

Number of *first admissions*		372
Number of *re-admissions* ...	for the *same* disease	81
	for a *different* disease	184

The following table shows at a glance the admissions into hospital during the year and their causes :—

1874.	Average Strength.	Total Admissions.	Average Daily Sick.	Chicken-pox.	Measles.	Ague.	Remittent Fever.	Mumps.	Erysipelas of head and face.	Rheumatism, sub-acute and chronic.	Syphilis.		Phthisis.	Scurvy.	Apoplexy.	Paralysis.	Tetanus	Disorders of the Intellect.	Eye Affections.	Bronchitis and Pneumonia.	Pleurisy.	Dysentery.	Diarrhœa.	Diseases of the Liver.	Diseases of the Spleen.	Gonorrhœa.	Guinea-worm.	Debility.	Contusions and Local Injuries.	All other Causes.	Prevailing Diseases.
											Primary.	Secondary.																			
January	545	36	15·4	...	...	10	2	...	...	2	...	...	...	4	...	...	...	...	...	4	...	2	3	...	...	...	...	1	1	7	None.
February	641·9	40	20·1	...	...	7	...	...	...	4	2	...	...	1	...	...	...	...	...	1	...	3	3	1	...	1	...	...	4	13	
March	649·8	35	14·7	...	...	7	...	...	1	3	2	...	...	2	...	...	...	...	1	1	...	...	2	...	...	...	...	...	4	12	
April	646·5	47	23·1	1	...	9	...	1	...	1	1	1	...	...	...	...	...	...	2	3	...	3	2	...	...	...	...	3	4	16	
May	622	41	24·3	...	...	3	...	...	...	4	2	...	...	2	...	...	...	...	...	2	...	...	3	...	...	...	...	..	7	18	
June	624	54	27	...	...	9	...	6	...	2	...	...	...	...	...	...	...	1	..	3	...	...	5	...	...	2	...	1	5	20	
July	628·5	59	30·1	...	...	18	...	...	...	4	3	...	...	...	...	...	...	...	...	2	...	2	6	...	...	1	2	...	1	20	Ague and diarrhœa.
August	625	67	32·5	...	...	19	2	...	...	5	...	...	...	...	...	...	...	...	...	2	...	2	11	...	...	...	4	4	7	11	
September	617	41	36·5	...	...	12	...	...	...	2	1	...	...	...	...	...	...	...	...	1	...	1	...	..	...	2	...	3	5	14	None.
October	644	77	36·4	...	3	23	2	1	...	3	...	...	...	2	...	...	...	...	2	2	...	2	4	...	..	1	...	4	11	17	Fevers.
November	655·7	83	40·3	...	5	18	...	...	...	5	1	...	...	4	...	...	1	...	1	9	...	2	11	...	..	...	...	...	7	19	Ague and bronchitis.
December	647·5	57	33·9	...	...	13	...	1	...	3	4	...	1	4	...	...	...	...	...	3	1	2	2	1	...	...	...	1	3	18	None.
Total ...	628·9	637	30·5	1	8	148	6	9	1	38	16	1	1	19	...	...	1	1	6	33	1	19	52	2	...	7	6	17	59	185	

The admissions have numbered 637, being the same as during the year 1873, but the average daily number of sick has been a little less, or 30·5, while in 1873 it was 31·1.

Of the 637 admissions 148 were due to ague, of which 1 died: a much larger proportion of these cases than usual have been complicated with pneumonia of an asthenic type.

Remittent fever has furnished six admissions, one proving fatal.

Thirty-eight cases of *rheumatism* were admitted; in one of these death occurred suddenly from the formation of a clot in the heart.

Sixteen men have been admitted for *primary syphilis;* these were all cases of soft chancre, and in all mercury to a limited extent was exhibited. One of them proved very obstinate, ulceration extending all round the penis, and urethral fistula resulting. The man remained in hospital at the end of the year, having been under treatment *nine months.*

One case of *secondary syphilis* occurred in a young soldier, whose constitution was so impaired by the disease that he had to be discharged the service.

One case of *phthisis* was admitted, which proved fatal.

Nineteen men were admitted with *scurvy*, and many of the patients in hospital for other diseases have exhibited a scorbutic taint, their treatment being modified accordingly.

One fatal case of *tetanus* occurred. The patient, a young fifer, aged 16, was admitted for ague, and was injected hypodermically with quinine *twice.* I am very loth, however, to think that the disease could have been originated by the treatment, as out of three or four hundred cases in which I have adopted that method I have never known tetanus to occur before, nor did I ever hear of such a case in the practice of any other medical man.

Although, therefore, some might be disposed to argue on the principle "*post hoc, ergo propter hoc,*" I think I am justified in looking upon the occurrence of tetanus as a *coincidence* and not a *consequence.*

Bronchitis and *pneumonia* furnished 33 admissions; nine of these occurred in the month of November, but the others were pretty equally distributed over the year.

One case of double pneumonia terminated fatally.

One man (remaining in hospital from the year 1873) under treatment for *palpitation of the heart* died suddenly in the month of January; the heart's action had been very turbulent during life, and a distinct *thrill* (simulating an aneurismal one) was to be felt on applying the hand to the chest; a loud "bruit" was also to be heard all over the chest. At the *post-mortem* examination *no aneurism was found,* but there was a large clot in the right ventricle which must have given rise to the *thrill* and "bruit" in question.

Nineteen men were admitted for *dysentery;* all recovered under the treatment by ipecacuanha.

Fifty-two cases of *diarrhœa* occurred; all made good recoveries.

One case of *hepatitis* was admitted in December, and was treated with chloride of ammonium; he was still under treatment at the end of the year, and bids fair to make a good recovery.

Six cases of *guinea-worm* were admitted in July and August, one of the men having no less than four of the parasites in different parts of his body. All these men belonged to the Mochee caste; they all came with the regiment from Bhuj, and had not been away from head-quarters since the arrival of the regiment in Bombay; they must, therefore, have made their acquaintance with the parasite in Bombay itself. The lines are, as already stated, supplied with Vehar water, but on inquiry I found that the iron tanks from which the Mochees obtained their water had not been cleaned out for a long time, while the tanks reserved for other castes had been periodically cleansed; on my recommendation the Mochees' tank was also cleaned out, and no fresh cases of guinea-worm occurred.

One case of *fibrous tumour of the omentum* was admitted; as it unfitted him for the duties of a soldier he was discharged the service.

A case of *syphilitic laryngitis* was admitted in July. At first his symptoms were serious, and I thought that tracheotomy would probably be required, but under treatment by iodide of potassium and the occasional inunction of mercury he steadily improved, and was discharged to duty.

Of the contusions and other local injuries included in the return, two cases of scalp wound (bone not exposed) were the result of a scuffle with the police, and one man was admitted with a lacerated wound of the finger, which he had received in a quarrel with another sepoy; all the other cases of injury were of accidental origin.

Seven admissions into sick-quarters occurred among the European officers, 4 for slight attacks of ague, 2 for rheumatism, and 1 for dyspepsia. One of these cases terminated fatally; it was that of an officer of thirty-three years' service, whose long residence in India had told severely on him and rendered him unable to bear up against even a slight attack of illness. One officer was sent to England on medical certificate, suffering from great debility and emaciation, the result of repeated attacks of ague.

Invaliding.

Six men were sent on medical certificate to their own country during the year; the diseases from which they suffered being as follows:—

2 ague.
1 scurvy.
1 debility.
1 gonorrhœal rheumatism.
1 guinea-worm (abscess and great debility).

Twenty men *above* 15 *years'* service were sent before the General Invaliding Committee, and obtained their pensions. The disabilities which led to their being invalided were as follows:—

14 general debility, chronic rheumatism, and old age.
2 defective vision.
2 varicose veins.
1 deafness.
1 deformity of hand from injury.

Six men *below* 15 *years' service* were also discharged the service on account of the following disabilities unfitting them for service in the ranks:—

2 broken-down constitution.
1 defective vision.
1 disease of knee-joint.
1 tumour in abdomen.
1 secondary syphilis.

Principal Causes of Sickness.

Although the number of admissions into hospital have been the same as during the year 1873, the various diseases have contributed to make up the total in very different proportions for the two years, the number of cases of *ague* having been much less in Bombay than at Bhuj, while with *bowel* and *bronchial affections, rheumatism,* and *syphilis* the reverse has been the case. This is shown in the following table:—

	Ague.	Dysentery.	Diarrhœa.	Bronchitis and Pneumonia.	Rheumatism.	Primary Syphilis.
1874 ...	145	19	52	33	38	16
1873 ...	210	13	42	29	19	6

The principal causes of disease during the year have been *ague, rheumatism, bronchial affections* and *diarrhœa.* I believe the cases of diarrhœa to have been more frequently caused by irregularities of diet than anything else, as a large number of the cases were cured by a dose of rhubarb and magnesia.

Principal Causes of Mortality.

The causes of the seven deaths which occurred in hospital were as follows:—

Two from the formation of clots in the heart in patients under treatment for palpitation of the heart and chronic rheumatism, respectively.
One from remittent fever.
One from ague and scurvy combined.
One from tetanus.
One from pneumonia.
One from phthisis.

Mortality according to Race.

The different races contributed to the mortality in the following proportions:—

Purdasees three	...	One clot in heart. One phthisis. One pneumonia.
Mahrattas two	...	One clot in heart. One ague and scurvy.
Purwarrees two	...	One remittent fever. One tetanus.

Influence of Rain-fall.

The first rain fell on the 2nd of June, and the last on the 14th of October. The greatest fall in any one day was 5 inches and 29 cents; this was registered on the 23rd of July.

The total rain-fall amounted to 83 inches and 80 cents, being distributed among the respective months as follows:—June, 17 inches and 38 cents; July, 41 inches and 34 cents; August, 9 inches and 86 cents; September, 15 inches and 22 cents; while in the month of October only 2 cents were registered.

With regard to the influence of the rain-fall upon the health of the regiment, I attributed an increase that occurred in the number of admissions for diarrhœa and ague during the months of July and August to the very damp and consequently unhealthy state of the men's houses during those months: this was not so much from leakage of rain through the roof as from *soakage upwards* through the ground, which rendered the lines quite unfit for human habitation during the month of July, and I considered it a matter for congratulation that the daily average number of sick was only 30·1 during that month.

There was a slight increase in the number of admissions from malarial fever during the months of October and November subsequent to the termination of the rainy season, but the disease cannot be said to have *prevailed* to any serious extent.

Epidemics.

In the month of June a very slight epidemic of *mumps* occurred: six sepoys and one recruit boy were admitted, and one man who was under treatment for boils was attacked with the disease while in hospital (this man was occupying at the time a bed lately vacated by a case of mumps); of the eight cases treated only one suffered from metastasis to the testicle. One solitary case of mumps occurred also in the month of December in a man whose children had recently suffered from the disease.

Towards the end of the year *measles* prevailed to a limited extent among the families of the regiment, 3 women and 46 children being attacked. During the last week of October 3 sepoys were admitted suffering from the disease, and 6 during the month of November, in two of whom (both weakly men) intercurrent pneumonia supervened, and they remained a long time under treatment, but ultimately did well.

Small-pox.

This disease cannot be said to have prevailed as an *epidemic*, but two cases of it occurred among the families of the regiment—one in March, a native Christian woman, the wife of a bandsman (this case was, with the sanction of the Deputy Surgeon-General, transferred for treatment to the Jamsetjee Jejeebhoy Hospital), and one in May, the child of a sepoy; both cases made good recoveries.

Cholera.

No cases occurred during the year in the regiment, nor did I hear of any persons being attacked in the vicinity of the lines or hospital.

Vaccination and Revaccination.

These have been practised *regularly* and *successfully*, as shown in the following table:—

Vaccination.				Revaccination.		
Number of Primary Operations.	Successful.	Unsuccessful.	Number of Persons operated on.	Number of Persons operated on.	Successful.	Unsuccessful.
68	63	5	63	43	31	12

General Health and Physique of the Men.

The physique of the men composing the 20th Regiment will, I think, bear comparison with that of any other corps. There will always be in every regiment a few "weedy" men, their presence being caused by the enlistment, when young, of men with a comparatively *mediocre* development in the hope that with more pay and food than they have hitherto been accustomed to, they will "*fill out*," such anticipation not being always realised. In the 20th Regiment, however, there is only a minimum of such men, and there is no doubt that the regiment generally is *as fit to take the field* as any corps in the Bombay Army.

The general health of the men during the year has been *good*. But in a native regiment there is always a certain proportion of men who from motives of economy habitually under-feed themselves; such men are, of course, more liable to disease than others, and do not recover so quickly when attacked. It must also be recollected that the lines now occupied by the regiment are *not all that can be desired* from a sanitary point of view, and this may, in some measure, account for the greater amount of sickness in the 20th Regiment than in the Marine Battalion.

Treatment of Disease when special—Ague.

This disease not having prevailed to any unwonted extent, I did not have such a general recourse to the hypodermic injection of quinine as in former years, but reserved this method of treatment, as a rule, for those cases in which quinine administered by the mouth failed to have the desired effect. I resorted to it in 16 cases altogether; in *eight* of these *one* injection proved sufficient, in *seven* a *second* injection was required, and in one the injection was not repeated, as it gave rise to great local irritation.

In accordance with instructions issued by the Surgeon-General, I tested the value of *cinchonidine* in the treatment of ague—I administered it in ten or fifteen-grain doses daily to 35 cases of quotidian ague; in 20 of these it *effected a cure*, but in the remaining 15 it failed to prevent the accessions, and I had to substitute quinine for it in their treatment.

Erysipelas.

A bad case of this disease affecting the head and face was admitted in March: I at once adopted the treatment by large doses of the tincture of the muriate of iron in which from former experience I had great faith. The patient took 30 minims of the tincture in water every two hours for two days (the treatment being discontinued during the night); he took *eight* doses on the *first* day and *eight* on the *second* (or 1 oz. of tinct. ferri mur. in two days); on the third day the swelling having much decreased, and the vesications having commenced to dry up, the dose was diminished to 20 minims, which he took eight times in the day. On the fourth day he was convalescent, the swelling having disappeared and desquamation of the cuticle having commenced.

Dysentery.

Although tolerance of ipecacuanha is characteristic of this disease, it sometimes happens that a "*bolus*," containing 10 or 15 grains of the drug, causes vomiting; to obviate this I am in the habit of giving a draught containing twenty or twenty-five minims of tincture of opium about an hour before the "*bolus*" is taken; this generally prevents the vomiting and facilitates the repetition of the ipecacuanha every morning until the stools become fœcal.

Hepatitis.

In a case of this disease, which was admitted in the month of December, I adopted the treatment by chloride of ammonium with great benefit; the patient was still under treatment at the end of the year, but was convalescing rapidly.

Special Observations.

Among the many influences to be taken into consideration when discussing the amount of sickness in the regiment, is the complete change of climate to which the men were subjected in coming to Bombay. A regiment that has been stationed in the dry climates of Guzerat and Cutch for the last twelve years cannot be insensible to so great a change, more especially when it is remembered that the moist climate of Bombay is more relaxing than any that the men had *recently* been accustomed to, while a much greater amount of work has been expected from them. In spite, however, of these drawbacks the regiment has at no time proved unequal to the duties required of it; on the contrary the sick list was never at any time during the year so small as during the month of February when the duty was heaviest, picquets being stationed in all parts of the native town.

The cases of pneumonia treated during the year have almost without exception been of the *asthenic* type; this was especially evident in those instances in which the disease occurred in its *intercurrent* form as a complication of measles and malarial fever; in these cases I found that the best results were obtained where a tonic treatment was adopted from the first.

Venereal disease has, with one exception already mentioned, proved easily amenable to treatment: a mild mercurial course was in all instances employed, and the disease in its secondary form was but rarely observed.

Intemperance being a failing to which the native soldiery are not addicted, may be almost disregarded when treating of the conditions which influence the health and efficiency of a native corps. No capital operations have been performed during the year.

Great care has been observed in the *visual examination* of recruits, and some have been rejected, their sight not being equal to the requirements of the present day, when all troops, without distinction of creed, are armed with rifles. As I stated in my last report, however, the "Snellen's types" furnished to Medical Officers of native regiments are unnecessarily *costly* and *complicated*: copies of the "*test-dots*" used for the same purpose at Netley might be issued to each regiment at a very trifling cost, and, if plain instructions were printed thereon in the vernacular, might be entrusted to non-commissioned officers when proceeding on a recruiting tour, thus enabling them to make a rough visual examination of each recruit, and at once to reject an unsuitable candidate.

Resumé of the whole.

Having avoided all unnecessary verbiage, and observed, as far as possible, the rules of *précis*, it would be difficult for me to make a *resumé* of the foregoing report without being guilty of an amount of recapitulation which would be tedious. I may be permitted here, however, to call special attention to a *few* only of the principal points already discussed, and on which it is most important that speedy action should be taken. And, first, the excessive *dampness during the rains* of the *lines, quarter guard*, and *lock-up rooms*; in the two latter cases the defect might be remedied by *raising the floor* inside *and covering it with chunam*; and to diminish the discomfort experienced by the men *in their houses*, water-proof sheets might with advantage be served out to each man for the monsoon. *Scanty accommodation* and *deficient ground-space* can, of course, only be remedied by building new lines on a more spacious site, but the *ventilation of the houses* could be improved by applying the ridge system of ventilation to the roofs.

The *drainage of individual houses* can only be *perfect* when pucka-built stone bathing places and drains, with a *central drain* down each street, exist throughout the lines.

A *new latrine* for the hospital is urgently required; it should be larger than the present one.

The *brick-oven* already mentioned is also a desideratum.

Instruction to Medical Pupils.

The frequent changes among the pupils attached to the hospital during the year and their frequent absence on civil duty in the surrounding districts have precluded the affording of any regular instruction in English, but this was the less necessary, as those pupils who had been under me at Bhuj were already proficient in English, and the others who have been attached have for the most part been "*passed*" medical pupils.

With regard to *professional* knowledge, I have always made it a practice to lose no opportunity, at the regular morning visit, of affording such instruction in the means of diagnosis and the principles of treatment as the cases under observation admit of; and that my efforts in that direction have borne good fruit, is proved by the success obtained at the half-yearly examinations by the pupils formerly under my supervision.

Detachment 4th Regiment Native Infantry (Rifles).

Average strength { European Officer ... 1.
Natives..... 149·5.

BOMBAY.—Surgeon H. DETATHAM, in medical charge.

Lines—available Space.

The accommodation provided for the detachment is good and ample; it consists of one long pendall containing 218 separate rooms. The pendall is 20 feet high in the centre and the side walls 10 feet, but the *partition* walls between the rooms are only 8 feet high, the verandah at back and front is 6 feet wide; each room measures 12 feet by $7\frac{3}{4}$, and contains (allowing for the

sloping roof) 1,162 cubic feet of space, the distribution of the rooms on the 31st of December was as follows :—

3	native officers	12 rooms.
75	non-commissioned officers and men with families.	95 „
77	single men	89 „
8	followers	8 „
	Standing empty	14 „
	Total ...	218

Each single man has a room to himself (and in some cases more), so that he enjoys 1,162 cubic feet of space. With regard to the married men, the amount of space enjoyed is as follows :—

Number of men with families...	75
Number of women	78
Number of children	116
Total ...	269 persons occupying
	95 rooms, containing
	1,162 cubic feet in each.

269) 110,390 (410 average number of cubic feet to each person.

In rear of the pendall are a number of little bathing sheds which are used by the women of the detachment.

Quarter-guard. Is a suitable building in front of the pendall; I find on calculation that each man of the guard enjoys 48 feet of superficial area and 576 cubic feet of space; this amount is, of course, diminished when prisoners are confined in the guard.

Ventilation. There is no system of ridge-ventilation in the roof of the pendall, but the doors of the quarters, being seven feet high, admit of the entrance of a free current of air, which is amply sufficient for all sanitary purposes.

Drainage. The ground in front and rear of the pendall drains itself naturally; no water lodges anywhere near the men's houses.

Tanks. There is a large tank immediately in rear of the men's houses; the water from it is only used for washing clothes. The tank always contains water, and does not at any time give off any offensive effluvium. There are also two covered wells in front of the pendall which are generally resorted to by the sepoys for bathing purposes.

Conservancy and Sanitary Arrangements. Four sweepers are entertained for the purpose of keeping the ground in front and rear of the pendall clean and free from rubbish.

There is only one small latrine which is reserved for the women of the detachment, the men using either the latrine of the 20th Regiment N.I. or the Sonapur latrine.

Water-supply. In the verandah at the rear of the pendall are four taps through which a supply of Vehar Lake water for drinking is received; the supply has been both good and sufficient throughout the year.

Food. The pendall in which the men are quartered being close to Crawford Market, they have every facility for obtaining such supplies as they may require (*vide* report of the 20th Regiment).

Duties and their Effect on Health. The duties performed by the detachment have not had any bad effect upon the health of the men, and they had five consecutive nights in bed, being more fortunate in this respect than any other native troops in Bombay.

Cells. There are no separate cells; prisoners are confined in the quarter-guard.

Hospital. The sick of the detachment are treated in the hospital of the 20th Regiment N.I., which is fully described in the report on that regiment.

Sickness, Mortality and Invaliding. The average daily number of sick during the year was 5·3, and the total number of admissions was 120, which latter were furnished by 66 men in the following proportion :—

36	men	admitted	once,	giving	36 admissions.
16	„	„	twice	„	32 „
8	„	„	3 times	„	24 „
3	„	„	4 „	„	12 „
2	„	„	5 „	„	10 „
1	„	„	6 „	„	6 „
Total 66	men treated.			Total 120	admissions.

Of the 120 admissions 54 were re-admissions, as shown in the following table :—

Number of first admissions		66	
Number of re-admissions	for the same disease ...	25	Total 54.
	for a different disease ...	29	

The following table shows at a glance the admissions into hospital and their causes during the year :—

1874.	Average Strength.	Total Admissions.	Average Daily Sick.	Ague.	Rheumatism, subacute and chronic.	Syphilis.		Scurvy.	Disorders of the Intellect.	Eye Affections.	Palpitation of Heart.	Bronchitis and Pneumonia.	Dysentery.	Diarrhœa.	Diseases of the Liver.	Debility.	Contusions and Local Injuries.	All other Causes.
						Primary.	Secondary.											
January	156·4	8	1·4	5	...	...	...	...	...	1	...	...	...	...	...	...	...	2
February	158	12	3·8	2	...	...	...	...	...	2	2	1	...	1	1	...	1	2
March	158	8	4·6	3	...	...	...	1	...	...	...	...	...	...	...	...	3	1
April	158	7	3·2	2	...	...	...	..	...	...	...	3	...	2	...	...	...	...
May	139·5	11	5·5	3	...	...	1	...	...	1	1	1	...	...	...	...	...	4
June	142·1	10	6·4	4	...	...	...	1	...	...	...	1	...	...	...	...	2	2
July	142·5	8	5·5	2	...	...	...	...	...	...	1	2	1	1	...	...	1	...
August	143	10	5·4	5	...	...	...	...	...	...	...	...	1	...	1	...	2	1
September ...	140	8	4·6	4	...	...	...	...	...	...	...	1	...	1	...	...	2	...
October	152	16	7	3	...	...	...	1	...	...	...	2	1	1	...	1	3	4
November	152·1	18	8·6	5	3	1	1	...	...	1	...	2	...	...	...	...	...	5
December	152·7	4	7·8	1	...	...	...	...	1	...	...	1	...	...	...	...	1	...
Total...	149.5	120	5·3	39	3	1	2	3	1	5	4	14	3	6	2	1	15	21

The health of the detachment has been good during the year, the average percentage of sick to strength having been only 3·55.

120 patients were treated, of whom 1 died.

Of the 120 admissions 39 were due to ague; one of these in the month of February suffered severely from intercurrent pneumonia, but afterwards made a good recovery.

Bronchitis and pneumonia have furnished 14 admissions; all these cases did well.

One case of primary syphilis occurred, and one of tertiary syphilitic ulcers all over the body in a man of short service; he was under treatment for six months and greatly improved, but he was invalided as unlikely ever again to be of much use as a soldier.

One man who suffered from palpitation of the heart was admitted four times.

One case of chronic jaundice was admitted in February; he was put through a mild mercurial course, and subsequently iodide of potassium was administered, a cure resulting. In another case of congestion of the liver admitted in August (a very weakly man), abscess resulted, and the man died.

One case of melancholia was admitted in December and remained under treatment at the end of the year.

No cases, either of cholera or small-pox, were admitted during the year.

No capital operations have been performed.

Principal Causes of Sickness—Invaliding. Three men were pensioned on account of functional derangement of the heart, chronic bronchitis, and varicose veins respectively; and one man under fifteen years' service, suffering from syphilitic ulceration, was discharged with a gratuity.

The principal cause of sickness (as usual with native troops) has been ague; but the cases were, as a rule, of a mild character and readily yielded to treatment.

Principal Causes of Mortality. One death, which occurred in hospital, was due to abscess of the liver; the patient belonged to the Mahratta caste.

Influence of Rain-fall. The admissions into hospital were certainly greater during the months of October and November immediately after the rains, the increase being for the most part due to such diseases as are common at that time of the year, namely, ague and bronchial affections.

Epidemics. No epidemic disease prevailed during the year.

Vaccination. Vaccination has been regularly practised, the results being as follows:—

Primary operations	23
Successful	22
Unsuccessful	1
Number of persons operated on...	23

The unsuccessful case (a child) proceeded to the Konkan before I could operate on it a second time. There being no recruits or recruit boys with the detachment, revaccination was not practised.

General Health and Physique of the Men. The general health and physique of the men composing the detachment is decidedly good.

Treatment of Disease when special. Under this head I have nothing to mention, except the occasional administration of quinine by hypodermic injection in cases of malarial fever, and the treatment of eight cases of ague by cinchonine, in two of which I had subsequently to use quinine.

Right Wing, 7th Native Infantry.

TANNA.—Surgeon-Major H. ATKINS, in medical charge; Strength, 319.

1. The wing of the 7th Regiment N. I. is stationed at Tanna, and there have been no movements during the year.

2. There have been no detachments during the year.

3. *a.*—The military lines of Tanna consist of a small strip of ground, 200 yards long and 200 broad, facing the Tanna Creek, with 120 yards of open space intervening. The lines consist of sixteen blocks, arranged in eight rows, each separated from the other by a street 30 to 35 feet wide in the new and 26 to 40 feet in the old. They are bounded on the north-

west by the road from the town to the Bunder, on the east by the Tanna Creek and the bungalow belonging to the Salt Commissioner—on the southern and westerly sides the native town with houses, partly occupied by Europeans and natives, intervening.

On the site of the present lines there was originally a large native town which was removed on our taking possession of the fort in 1774 and on the new lines being built in 1873 on digging the foundations the sections passed through the *debris* of old buildings, dust-heaps consisting of ashes and bones, &c., for three feet; beneath that black moorum, which rests on trap-rock.

The lines are situated on the sides of a slope towards the creek, the highest point being on the esplanade in front of the fort, which dips on all sides towards the creek on the east and south and to the low lands of the town on the west. Near the fort trap-rock crops up on the surface, and the sections of wells, foundations of houses, and of the lines, and their neighbourhood, &c., show the condition of the soil.

It is generally alluvial, resting on black moorum and trap-rock; whereas the foundations of the new lines cut through four feet of *debris* of human habitations, filth, &c. &c., beneath that alluvial soil, then black moorum and trap. What the foundations of the old lines are I am unable to state; but, if I may judge from a site dug in my own compound close by, it is four feet of alluvium and *debris* of old houses lying on hard trap-rock. It is easily permeable to water, as during the rains a current of fresh water may be seen about four feet below the banks running into the creek, and, if so, it will most readily convey the surface water into the wells, which are built so close to the huts.

Drainage.

b.—There is only one drain, and that leads from the well on the southern side of the lines by the side of the road towards the creek. It is made of cut stone, and well fulfils its purpose. For the other parts of the lines there are no proper drains, and from the great permeability of the soil must play an important part in the large amount of impurities as found in the water of the wells on analysis.

4. The climate is decidedly enervating, there being no cold season. From March to June it is hot, dry and enervating, from June to November it is hot and moist, and during the months of December, January and February somewhat cool.

The rain-fall during the year has been 130 inches and 96 cents.

The effect of the Tanna climate is to induce malarious cachexia with its numerous equelæ.

Malaria is especially prevalent during the months of November, December, January, and February, and more or less so at all times of the year, affecting the children and those that are sickly. During the rainy season the dampness induces much chronic malarious diarrhœa, which frequently proves fatal, especially when children are attacked, who cannot be sent away for change to a more bracing climate.

5. *a.*—There is no available space, all being required for military purposes.

Ventilation.

b.—The new lines are built on the following plan:—Each compartment for two sepoys is feet $13\frac{1}{4} \times 9 \times 6\frac{1}{4}$, which allows for each sepoy $745\frac{1}{4}$ cubage and $119\frac{1}{4}$ feet superficial space, raised on an average plinth of 2 feet from the ground, with a tiled roof and bamboo sides covered with mud.

The old huts are of the same size, but with a lower plinth; the floors are generally damp and saturated with the concentrated filth of the last sixty years. During the rains all these evils are increased, and mephitic vapours ascend, causing sickness. Another source of sickness is the custom of the natives to wash inside their houses; and as the floors are only of mud, and there being no proper drains, the floors, even during the hot and dry season, are more or less damp.

Neighbouring Villages.

c.—There are none, excepting the town of Tanna, which is in its immediate vicinity on its S. and W. aspects.

Drainage of the Huts.

d.—There is none that can be called by that name, the sepoy women bathing inside their huts; the water percolates through the soil into the surrounding wells, provided they are within soakage distance.

Tanks.

e.—There are none near the lines.

6. The conservancy of the lines is carried out by five sweepers and a filth-cart. The latrines are cleaned out twice a day, and the ordure removed to a distance. The position of the latrines makes them a nuisance to the people living in the surrounding houses. They are so placed as to be objectionable from whatever quarter the wind blows. If it blows from the north the houses on the southern side are affected; if from the south, that of the Commissioner of Customs; and if from the east, it blows into the lines, and the houses occupied by Europeans on the western side suffer from the nuisance. MacDougall's powder was recommended to be freely used to remove the offensiveness, but it was found to be too expensive.

7. *a.*—The regiment is supplied with drinking water from five wells; of these three are in the vicinity of the lines, and two are at a distance, near the road to the Bunder. All the wells have been reported on by the Analyser to Government as follows:—"I regret that I am unable to speak in favourable terms of any of the five samples of drinking water; all five show such evidence of deleterious organic contamination that it is impossible for me to point out one of the five as a good potable water."

Water-supply.

b.—As regards the wells in the lines, the impurity depends chiefly from their position being so close to the neighbouring huts—one being four feet, another twenty feet away—thus receiving all the sub-soil drainage from the habitations in their immediate vicinity. The two wells near the quarter-guard are impure from dirt and leaves falling into them, as they are situated close to the main road to Poona. Their analysis is as follows:—

Sources of Impurity.

Statement of the Result of the Examination of Nos. 1 to 4 Wells' Samples of Water used by the Sepoys of H. M.'s Right Wing 7th Regiment N. I. at Tanna.

	Drinking Water.			Washing Water.
	Purwarrees.	Mochees.	Quarter-guard.	
	1	2	3	4
Grains per Gallon.				
Total solids	35·28	33·32	61·60	160·44
Less on ignition	1·68	1·68	.....	14·84
Chlorine	5·46	3·97	20·76	65·20
Sulphuric acid	1·34	0·47	2·21	2·59
Silica	4·20	7·00	4·76	5·04
Lime	8·30	6·42	8·30	19·95
Magnesia	3·52	3·43	4·23	17·85
Hardness total by calculation	23·44	20·05	25·45	90·98
Permanent by soap test	5·25	4·55	9·45	.....
Ammonia determination (after Wanklyn) free	·0035	·0052	·0049	·0052
Albumenoid	·0157	·0157	·0128	·0235
Of nitrates and nitrites	·042	·063	·630	·588
Oxygen total required at 140 F. in presence of acid.	·0595	·0735	·0840	·1050

Ammonia and Oxygen determination in Milligrammes per Litre, i. e., parts per million (1,000,000).

	Drinking Water.			Washing Water.
	Purwarrees.	Mochees.	Quarter-guard.	
	1	2	3	4
Grains per Gallon.				
Ammonia, free	·05	·075	·07	·075
Albumenoid	·224	·224	·183	·336
Nitrates and nitrites	·60	·90	9·0	8·4
Oxygen total required	·85	1·05	1·20	1·50

Physical characters of the clean water drawn off after standing over 24 hours—

No. 1. Odour earthy, re-action neutral, taste nil, faint green, and somewhat milky.
No. 2. Odour nil, re-action neutral, taste nil, colourless and clear.
No. 3. Do. do. do. faint yellowish green, and slightly milky.
No. 4. Odour nil, re-action very faint, green tinge clear.

Sediments—

No. 1. Abundant, black and offensive; contains diatoms, rotifers, and filaria.
No. 2. Abundant, black; diatoms, rotifers abundant.
No. 3. Do. do. diatoms and filaria.
No. 4. Do. do. do. do.

c.—There are two suggestions that might be carried out: 1st, to fill up the present wells and make new ones at a proper distance from the lines; 2nd to obtain the water-supply from Vehar or Toolsi.

Suggestions.

8. The price of food grains per rupee as furnished by the Tanna Foujdar is as follows, premising that it is of good quality:—

Bread, 2nd sort	17 lbs.
Rice, 2nd sort	20 lbs.
Wheat, 2nd sort	17¾ lbs.
Bajri, 2nd sort	35 lbs.
Jowari	34 lbs.
Dall, Túr	15 lbs.
Ghee	lbs. 2 and 10 ozs.
Milk	16 lbs.
Mutton	4 lbs.
Fish	.....
Oil, sweet	8 lbs.
Firewood	142 lbs.

Food. The diets of the sepoys and their dietetic value are as follows:—

	Punjabees.	Deccanees.	Konkanees.	Jews and Mussulmans.	Christians.
Wheat	24 ozs.	...	...	16 ozs.	8 ozs.
Bajri	...	16 ozs.	...	...	...
Rice	8 ozs.	8 ozs.	28 ozs.	8 ozs.	16 ozs.
Dhall, Túr	4 ozs.	4 ozs.	2 ozs.	2 ozs.	4 ozs.
Ghee	2 ozs.	1 oz.	½ oz.	1 oz.	1 oz.
Oil	...	½ oz.	1 oz.	1 oz.	½ oz.
Mutton } Average during the month.	...	1 oz.	1 oz.	1 oz.	1 oz.
Fish } Average during the month.	...	...	4 ozs.	4 ozs.	2 ozs.
Vegetables	4 ozs.	4 ozs.	4 ozs.	4 ozs.	4 ozs.
Mussala	8 drs.	1 oz.	1 oz.	1 oz.	4 drs.
Cocum or tamarind	...	1 oz.	1 oz.	1 oz.	8 drs.
Salt	6 drs.	6 drs.	6 drs.	6 drs.	6 drs.
Firewood	3 lbs.	3 lbs.	3 lbs.	3 lbs.	3 lbs.
Nitrogen	302·94	182	213·0	257·6	231·7
Carbon	7,140	5,609	5,998	5,467	5,583·8

The scale of diets, as furnished, appears to me to be of very doubtful correctness. They all contain much more carbon than is necessary for health, with a deficiency of the nitrogenous elements; and if such a diet be used by the men who are single, the amount must be much reduced when they have a family.

9. The clothing of the sepoy appears to be adapted for his mode of life, both as to quality and colour. As regards the fit, it might be made generally much looser.

10. The duties of the troops are chiefly confined to guarding the Tanna Jail. They get 3½ nights in bed to 1 of duty. It does not seem to have any prejudicial effect on their health.

11. The exercise of parades daily does not seem to injure their health. Their amusements and occupations are harmless and inoffensive.

12. For the lock-up rooms and cells there are three rooms, containing altogether 576 superficial feet and 6,912 cubage. Each guard-room has 1,728 feet cubage and 144 feet of superficial space. There are no solitary cells properly so called, one of the three rooms being used for that purpose.

13. There have been no marches during the year.

14. There is nothing to remark regarding the hospital surroundings: on the west is the civil hospital compound, on the east is partly *maidan* and partly the Assistant Judge's compound; on the north is the road from the town to the jail; on the south is the Assistant Judge's compound.

15. The hospital consists of one room 57 × 18¼ × 15, containing 15,603 feet cubage and 1,040 feet superficial space, and the verandah 155½ × 8 × 8¾ = 10,885 feet cubage and 1,244 feet superficial space. The doors and windows afford sufficient ventilation. It will accommodate 17 sick inside and 20 in the verandah, allowing 60 feet superficial space; the amount of cubage will only be 990 feet in the verandah and the full amount in the inside.

16. There has been no over-crowding during the year.

17. *a.*—There are no improvements to be made in the hospital, but the size might be doubled so as to allow 10 per cent. of sick to be of use when epidemics may occur.

b.—A well is required for the use of the sick.

c.—I would recommend that a well be constructed midway between the civil and military hospitals so as to be available for the sick of each hospital.

18. The hospital latrine consists of four seats, and is sufficient for the sick of the regiment when the number of sick is below 5 per cent.

19. The water for the hospital is brought by the regimental bheestee from the wells in the police lines, which in seasons of drought have a very scanty supply.

Analysis of the Water from the Wells used both by the Police and Military Hospitals.

Drinking Water. *Grains per Gallon.*	Police Lines.	
	6	7
Total solids	32·20	46·20
Less on ignition	...	...
Chlorine	2·73	8·19
Sulphuric acid	1·53	·38
Silica	5·60	6·44
Hardness total by calculation	20·44	32·48
Permanent by soap test	7·00	7·35
Ammonia determination (after Wanklyn) free	·007	·0098
Albumenoids	·0196	·238
Of nitrates and nitrites	·630	·735
Oxygen total required at 140 F in presence of acid	·0560	·2240
Ammonia and Oxygen determination in Milligrammes per Litre, i. e. parts per million (1,000,000)		
Ammonia, free	·11	·14
Albumenoids	·28	·34
Of nitrates and nitrites	9·0	10·5
Oxygen total required	·80	3·20

No. 6. Odour nil, re-action neutral, taste nil, faint greenish yellow.

No. 7. Odour nil do. do. do.

Sediments—

No. 6. Abundant, black, and offensive; contains monads and rotifers.

No. 7. Small quantity, light brown in colour, contains entromas trace.

20. The wing during the past year has been very healthy; there have been 293 admissions against 448 last year with 2 deaths, both connected with cardiac disease.

a. The prevailing disease has been ague, which formed 71 3 per cent. of the total admission with 1 death, complicated with cardiac disease in hospital, and 1 whilst on sick certificate also from ague.

Ague.

The following table shows the proportion to strength per *mille* of the admissions from ague in each month:—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Admissions	21·78	10·36	3·57	5·36	5·00	4·64	3·57	2·86	6·07	3·93	4·28	1·43
Deaths	...	...	...	...	...	...	3·57	...	...	...	...	...

It will be seen from the table above that it was most prevalent in January, February and September, and least so in July, August and December.

There has been nothing remarkable in the admissions from ague to comment on.

Three men suffering from malaria were sent on sick certificate; one of these died.

Rheumatism, acute and chronic. Eleven admissions; these require no remark. One was sen away on sick certificate.

Scurvy. There have been two admissions with one death out of hospital. He was sent away on sick certificate and died; I know no particulars regarding him.

Cardiac Disease. Hypertrophy 1: he came into hospital and died suddenly five days afterwards.

Bronchitis. Eight. These require no remarks, as they were of a trivial nature.

Dyspepsia Two, colic 3, dysentery 7, diarrhœa 10—total 22. These have all been of a mild nature and require no remarks.

There has been no change in my treatment this year from previous years.

Dislocation of the Shoulder. It happened during the month of September, and there is no report regarding it.

b.—There have been two deaths during the year, both from cardiac disease.

c.—There have been 18 sepoys invalided, chiefly from the effects of old age and length of service. The list below shows the exact causes of their invaliding:—

Old age and length of service	9
Varicose veins of right leg	1
Suspected aneurism and fistula in ano	1
Weak lungs	3
White swelling of left knee	1
Physical weakness and debility	3
Total ...	18

21. The table below shows the diseases from which the wing has chiefly suffered during the year as compared with last year :—

	1874.	1873.
Ague	204	270
Rheumatism	11	10
Dysentery and diarrhœa	17	13
Pulmonary disease	8	6

from which it will be seen that ague forms 68 per cent. of the admissions; diarrhœa and dysentery amount to nearly 6 per cent., the remaining 26 per cent. being from trivial complaints.

Principal Causes of Mortality.

22. Both of the fatal cases were caused by cardiac disease—one after 29 years service, the other in a sepoy after 16¾ years' service, who was also suffering from ague.

23. As regards mortality according to race, one was an inhabitant of Hindustan, the other came from the Konkan.

24. The rain-fall during the year has been as follows :—

1874.	Rain-fall. Inches.	Rain-fall. Cents.	Winds and State of the Atmosphere.
January	...	...	N.E. & S.
February	...	...	S. & S.E.
March	...	...	N.E.
April	...	...	N.E. & S.W.
May	...	...	S.W. & S.E.
June	27	53	N.E. & S.
July	69	34	S.W. & N.
August	19	53	S.E.
September	14	9	S.W.
October	...	37	N.E. & S.W.
November	...	...	S.E.
December	...	10	S.W. & S.E
Total..	130	96	

Influence of Rain-fall.

There is nothing to show that the unusual rain-fall of this year has affected the health of the wing.

25. There have been no epidemics during the year.

Vaccination.

26. The children have been as usual vaccinated whenever they were sufficiently old to under go the operation; the results are as follows :—

	Total vaccinated.	Compared with previous Year. Increase.	Compared with previous Year. Decrease.	Successful vaccinated.	Percentage of successful.
Vaccinated, 1873...	34	...	...	34	100·
Vaccinated, 1874...	31	...	3	28	93

Revaccination.

Forty-seven sepoys have been revaccinated during the year, with the following results :—7 successful and 40 unsuccessful. I would beg to point out the difficulty of performing revaccination when the service of the sepoy is required on duty. There has been no small-pox during the year.

27. The physique of the men of the wing is fair; there are about six young sepoys that appear to be thin. Many of the men are old, and would, if proceeding on service, have to be invalided.

28. There has been no special treatment of disease during the year.

29. The medical history of the wing has not presented anything worthy for special observation.

30. There have been no pupils during the last six months from January to July. One pupil, Toolseeram Narayen, General No. 621, was with the regiment; he refused to obey my orders regarding instruction, and resigned the service.

Resumé of the whole.

31. From the preceding remarks we find that the regimental lines of Tanna have been built upon the site of an old town, thus rendering the flooring of the huts most permeable to water. The native habit of washing inside the houses causes their floors to be more or less damp, even in the dry season, thereby raising the sick list; also the regimental wells of drinking water being placed so close to the huts, must with such a soil be affected with impurities consequent on the habits of the sepoy. From the position of the lines it must be seen that the effluvia from the latrines cannot but be felt on all sides by the surrounding houses, and it is doubtful if anything can be done to improve them.

The health of the wing has been good, and the physique is fair with a few exceptions, but several of the sepoys are old and unfit for active service.

H. M.'s 26th Regiment Bombay N. I.

Surat.—In medical charge of Surgeon W. McConaghy; Strength 649.

Number of admissions from all causes	... 1,267
Number remaining on 1st January 1874	... 20
Daily average number of sick ...	... 31·3
Percentage treated to strength ...	... 198·3
Deaths to strength	... 0·92
Do. to treated	... 0·46

1. The regiment returned to Surat from the camp of exercise at Chinchwad on the 7th January last, and has remained in this station since.

2. No detachments have been furnished by the regiment during the year.

3. The country around Surat is quite flat, and fairly wooded with large trees; there are no hills within twenty miles of the cantonment, and these are not of any great height. The soil is black and extremely fertile, about seven feet deep, overlying yellow clay, intermixed with some kunker, and the geological formation of the surrounding country is trap-rock. The water of the district is generally regarded by the people as of an inferior quality and brackish, but a sufficient quantity of fresh or sweet water can be easily obtained. The large river Tapti, which is tidal in this part, flows within a short distance of the camp; there are no other water-courses in the neighbourhood which flow after the monsoon is over.

The drainage of the country is not good, owing to the extreme flatness of the ground and the nature of the soil, by which the water is readily retained.

4. The two points referred to above have to a certain extent an injurious effect on the climate, and render it malarious, especially during and after the rains.

5. The lines are situated on the south bank of the River Tapti, about half a mile outside the city wall, on the road from Surat to Domus, which bounds them on the south; the river-bank is about 200 yards from their northern extremities. The huts are not built on plinths, but are slightly raised above the surrounding ground, and are in a good state of repair. The depth of the subsoil water from the surface varies in different part of the cantonment, from 27 feet 2 inches to 34 feet 3 inches; the average depth is 30 feet 2 inches. The lines consist of twenty ranges of huts running parallel to each other from the Domus Road towards the river; the width between each range of buildings is 61 feet. Each range consists of

a double row of buildings separated by a centre wall, from which the roof slopes on eithre side. The cubic capacity of each sepoy's quarter is 1,228 cubic fect, and that of each non-commissioned officer is 1,660 cubic feet, exclusive of the verandahs; the construction is of mud walls with tiled roofing; at the south end of each rangc there is a detached dwelling for a native officer which consists of two rooms, with a cubic capacity of 4,296 cubic feet. Under the ridge-pole there is generally an open space of about two feet, by which through ventilation is sccured. The level of the ground on which they are built is about 25 feet above the ordinary level of the River Tapti, to which from the centre of the lines a covercd drain runs, into which the drainage from the lines finds its way by means of a grating. There is no large village near the lines but only a few huts between them and the city wall, in which some low-caste people live; the sanitary condition of the place is not good. In each married quarter there is a "moree" which is made of chunam; it is used for ablution purposes, and the waste water is carred off through an open drain, which runs into the space between the rows of huts, and subsequently either becomes absorbed or finds it way to thc main drain. The regimental bazaar is situated on the southern side of the cantonment, about 400 yards from the lines; its buildinigs are in fair order, and the sanitary condition is good. There are no tanks in the neighbourhood.

6. The general sanitary condition of the lines and regimental latrines is good; all refuse matter in the cantonment is collected every morning and evening, and deposited at a short distance in the rear of the latrines. Conservancy is carried out by the tank-cart system. The sewage is conveyed some distance from camp, and deposited in holes which are carefully covered with dry earth.

7. The supply of water in camp is of an inferior quality and brackish, thc total solids in the different wells varying from 5·92 grains to ·966 grain per litre. The chief causes of impurities are chlorine, lime, alkalinc chlorides, and magnesia; tracces of ammonia are also prescnt in some of the wells. The best water about camp is obtained from a well in a Parsee's garden, a short distance from thc hospital, the total solids in which only amount to ·9 grain per litre. It does not seem to me that a better water-supply can be obtained at any moderate cost: however I believe that in the Tapti irrigation project, which is before Government, a copious supply of good water for Surat is provided, which would be a great boon to a district where almost all the wells are brackish.

8. Sepoys of every caste can easily obtain food of a good quality, either in the city or regimental bazaar. The supply is abundant; however the rates fluctuate a little; but, as a rule, the most expensive time is in and immediatcly after the rains. During the year under consideration the price of grain, &c., was lower than in the preceding two years. As in 1872 and 1873 the daily average cost for the ordinary food of each sepoy amounted to 5 annas and 6 pies, whilst in 1874 it was only 4 annas. From the subjoined table a fair idea will be given of the cost, amount, and quality of food used by the different castes:—

Diets of the Native Army.

	Mahrattas, Deccanees, Madrasees.				Sikhs, Purdasses, Chutrees, Brahmins.		Konkanees, Hindus, and Purwarrees.		Jews and Mussulmans.				Native Christians.	
	Mahrattas.		Madrasees.						Jews.		Mussulmans.			
	Qty.	As. p.	Qty.	As. p.	Qty.	As. p.	Qty.	As. p.	Qty.	As. p.	Qty.	As. p.	Qty.	As. p
Flour, wheat or bajri.	lb. 1	0 7	lb. 0	...	lb. 1	0 7	lb. 1	0 7	lb. 1	0 7	lb. 1	0 7	lb. 1	0 7
Rice	,, ½	0 5	,, 1¼	1 0	,, ½	0 5	,, ½	0 5	,, ½	0 5	,, ½	0 5	,, ½	0 5
Dall ...	ozs. 2	0 1	ozs. 2	0 1	ozs. 2	0 1	ozs. 2	0 1	ozs. 2	0 1	ozs. 2	0 1	...	...
Ghee ...	,, 2	0 8	,, 2	0 8	,, 2	0 8	,, 2	0 8	,, 2	0 8	,, 2	0 8	,, ½	0 6
Salt... ...	,, ⅔	0 ½	,, ⅔	0 ½	,, ⅔	0 ½	,, ⅔	0 ½	,, ⅔	0 ½	,, ⅔	0 ½	,, ⅔	0 ½
Mussala ...	,, 1	0 1	,, 1	0 1	,, 1	0 1	,, 1	0 1	,, 1	0 1	,, 1	0 1	,, 1	0 1
Cocum or tamarind.	,, ½	0 ½	,, ½	0 ½	,, ½	0 ½	,, ½	0 ½	,, ½	0 ½	,, ½	0 ½	,, ½	0 ½
Vegetables ...	,, 4	0 1	,, 4	0 1	,, 4	0 1	,, 4	0 1	,, 4	0 1	,, 4	0 1	,, 4	0 1
Oil, sweet ...	,, ½	0 3	,, ½	0 3	,, ½	0 3	,, ½	0 3	,, ½	0 3	,, ½	0 3	,, ½	0 3
Mutton ..	,, 4	1 0	,, 4	1 0	,, 4	1 0	,, 4	1 0	...	...	,, 4	1 0	,, 5	1 3
Fish... ...	,, 2	0 6	,, 2	0 6	,, 2	0 6	,, 2	0 6	,, 6	1 6	,, 2	0 6	,, 2	0 6
Firewood ...	lbs. 3	0 3	lbs. 3	0 3	lbs. 3	0 3	lbs. 3	0 3	lbs. 3	0 3	lbs. 3	0 3	lbs. 3	0 3
Average cost of diet per head per day ...	...	4 0	...	4 0	...	4 0	...	4 0	...	4 0	...	4 0	...	4 0

9. The sepoys wear cloth coats and serge trousers when on duty, but at other times they generally use cotton clothes. During the cold and wet seasons they use their great-coats. The head is protected when exposed to the sun by a white puggree. Half-boots with buckles made of native leather at Ahmednagar are used by the sepoys. The greater part of the admissions from contusion is the result of bad-fitting boots.

10. The duties of the men are moderate, and have no injurious effect on their general health. The number of consecutive nights in bed is five.

11. There is a gymnasium attached to the regiment in which all recruits are obliged to go through a course of instruction; there is also instruction given daily which it is optional for all sepoys to attend.

12. There are two regimental cells situated near the quarter-guard; the superficial area of each cell is 100 square feet and the cubic space 1,720 cubic feet. Only one prisoner at a time occupies each cell. Should there be more than two prisoners they are put in the quarter-guard.

13. The regiment marched from Khandála to Callian in the beginning of January; the average length of the marches was about eight miles. During the time the general health of the regiment was good.

14. The regimental hospital is situated on the western side of the lines, and about 150 yards from the bank of the river; the village of Utwha is about 500 yards from the back of the hospital. There are several large tamarind trees in the compound which assist in reducing the temperature during the warm season.

15. The ventilation of the hospital is good, and is chiefly by windows.

16. Owing to the prevalence of ague during the monsoon, and for some time after, there was slight over-crowding in hospital, but as the verandahs are large and roomy, the patients were generally comfortably located in them.

17. The wards of the hospital afford accommodation for only 22 patients, at 1,210 cubic feet per patient; however, a larger number is generally placed in them. The superficial area of the verandahs amounts to 6,236 square feet and the cubic contents to 72,382 cubic feet. The out-buildings are in good condition, but a cook-room is much required for the patients, who at present prepare their food either under the trees in the compound or in the hospital servants' houses. This subject was referred to in the previous year's report, but up to the present time nothing has been done.

18. The latrine is in a satisfactory condition, and the dry-earth system, which was introduced last year, appears to act well.

19. The water supplied to the hospital for drinking and cooking purposes is of a good quality, and is brought from wells at some distance from the cantonment limits. Water of an inferior quality and brackish is obtained from a well in the hospital compound.

20. During the year under consideration the general health of the regiment was not so good as in the previous one when judged by the total number of admissions and daily average sick:—

Total admissions, 1873	1,214.
Total admissions, 1874	1,267.
Daily average number of sick, 1873	27·3.
Daily average number of sick, 1874... ...	31·3.

The diseases furnishing the greater part of the admissions were, in their order of frequency, as follows:—Ague 806, contusion 69, boils 61, rheumatism 41, syphilis (primary 13, secondary 21) 34, diarrhœa 25, scabies 25, bronchitis 23, conjunctivitis 19, guinea-worm 15, dysentery 11, splenitis 9, pneumonia 5.

Ague furnished more than half of the total admissions, and was chiefly prevalent during the rains and the two months succeeding it. The disease was generally of the quotidian type and of a mild form; however some of the cases were of a more severe character and occasionally associated with troublesome diarrhœa. The admissions were 56 in excess of the previous year. The treatment pursued was either the administration of quinine or liquor arsenicalis, or the hypodermic injection of quinine. This latter treatment was frequently used and with a marked advantage in some of the patients, sloughing or inflammatory symptoms seldom following at the site of injection.

Of the total 806 admissions from ague during the year the number of patients actually under treatment only amounted to 373, the remaining 433 being made up by re-admissions, as shown in the following table:—

Admitted once		206	—total admissions		206
Do.	twice	57	do.	do.	114
Do.	three times	45	do.	do.	135
Do.	four do.	25	do.	do.	100
Do.	five do.	18	do.	do.	90
Do.	six do.	8	do.	do.	48
Do.	seven do.	6	do.	do.	42
Do.	eight do.	3	do.	do.	24
Do.	nine do.	3	do.	do.	27
Do.	ten do.	2	do.	do.	20
Number of men under treatment.		373	Number of admissions		806

The admissions with contusion were generally from shoe-bites, and were all of a mild character. The admissions from boils were three in excess of the previous year: as a rule they made their appearance in patients whose strength had been much reduced by fever. Rheumatism, chiefly of the chronic form, furnished 41 cases; these were generally old men, a number of whom has since been invalided.

The admissions from syphilis have been steadily on the increase since the arrival of the regiment at Surat; this will be best illustrated by instituting a comparison between the three years during which the regiment has been stationed here:—

1872	Admissions from primary syphilis	... 4	Total 5.
	Do. from secondary do.	... 1	
1873	Admissions from primary syphilis	...10	Total 24.
	Do. from secondary do.	...14	
1874	Admissions from primary syphilis	...13	Total 34.
	Do. from secondary do.	...21	

No doubt this increase of admissions from syphilis is chiefly owing to the want of sufficient authority for retaining females in hospital for treatment when in a diseased state; consequently I would beg to suggest that some measure be adopted by the local authorities to secure proper treatment for this class of patients.

Scabies was generally confined to a few of the recruits and some of the low-caste men.

Diarrhœa furnished 25 admissions; some of the cases were of a severe nature and required lengthened treatment. This disease, besides, formed a troublesome complication in several cases of ague.

There were only 25 cases of bronchitis; this was a decrease of 11 on the previous year. A few of the cases were of a serious character, and two of them proved fatal.

Conjunctivitis gave 19 admissions; the disease was not so prevalent as last year, when 33 cases were under treatment. Guinea-worm furnished 15 admissions; the patients were generally young recruits who had lately joined from the Konkan and Deccan.

The admissions from dysentery were six less than in the previous year; one death occurred from this disease. The admissions from splenitis were of a chronic character and had generally been contracted at Nasirabad. Five cases of pneumonia were under treatment; three of them were of a severe nature, one proving fatal.

The remaining diseases were of an ordinary character, and require no particular remarks.

During the year 30 men were invalided, viz., 17 from debility, 5 from chronic rheumatism, 3 from chronic bronchitis, and 1 from each of the following causes:—eczema, obesity, loss of voice, deafness, and hœmorrhoids.

21. I am inclined to believe that the large number of admissions from ague and boils is chiefly to be ascribed to the length of time that the regiment has been quartered in Guzerat and Nasirabad, as the climate of both places is undoubtedly of a malarious nature and the water generally of an inferior quality. The *maidan* on the western and southern sides of the lines is studded with holes, and the water which collects in these during the monsoon remains for some time owing to the retentive nature of the soil, and this cause may probably in a slight degree contribute to the prevalence of ague during and for some time after the rains.

22. Six fatal cases occurred among the sepoys in hospital, viz., 2 from ague, 2 from bronchitis, 1 from pneumonia, 1 from dysentery. They were all Hindus.

23. The Commandant of the regiment was attacked with a severe cold at the termination of the camp of exercise at Chinchwad, which was shortly followed by an ulcerated condition of the throat and stomach. He went to Bombay on medical certificate on the 21st February and died the fifth day after arrival there.

24. For some time before the rains the atmosphere is very still and oppressive, especially during the nights; this is generally relieved after the first good downfall of rain, but does not altogether disappear for some days. When the ground becomes well saturated, the admissions from ague rapidly increase, and, as a rule, this disease continues prevalent till the end of November or beginning of December.

25. There was no epidemic during the year. In the month of April one case of small-pox occurred; the patient was the wife of a sepoy, and had a good inoculation mark on the left arm. On the appearance of the disease she was removed from the lines and treated in a grass hut erected for the purpose, about $\frac{3}{4}$ of a mile from camp. The house in which the disease appeared was carefully disinfected and lime-washed before re-occupation.

26. Vaccination has been regularly and successfully performed during the year; re-vaccination has also been attended to. All recruits joining the regiment have been revaccinated, but in the majority of instances unsuccessfully.

27. The general health of the men at present is good, but a number of them are slightly emaciated, and their physique below the average, owing to having suffered much from fever.

28. No special treatment of disease was pursued.

29. The rain-fall during the year was 41 inches and 11 cents.; this is nearly 11 inches less than the rain-fall of 1873 and 12 less than 1872. During the month of April the thermometer registered highest: on the 15th it reached 102°, and on the 16th 105° at 2 P. M. in the hospital verandah. 103° on the 27th May was the highest temperature recorded in 1873. The lowest temperature was on the 13th January, when 52° was registered at 6 A. M. In the previous year the lowest temperature obtained was 49° on the 8th January at 6 A. M.

30. From the above remarks it will be observed—

1st. That the general health of the regiment has not been so good as during the previous year.

2nd. Ague and syphilis are the diseases which have chiefly been on the increase.

3rd. The rain-fall was much less than in either 1872 or 1873, and the temperature in the months of April higher than it has been since the arrival of the regiment in Surat.

31. The medical pupils have been regularly instructed in medicine, surgery, and materia medica, and occasionally in anatomy, English, and arithmetic.

H. M.'s 2nd Grenadier Regiment N. I.

ADEN.—In officiating medical charge, Surgeon-Major D. SIMPSON, M.D.; Strength, 636.

I would premise that, as I have received officiating medical charge of H. M.'s 2nd Grenadier Regiment N I. on the 24th ultimo, I am unable, from personal observation, to furnish satisfactory answers to many of the questions contained in the form of annual report for regimental Medical Officers. To do so fully implies more minute knowledge of details than my brief residence in Aden would admit of acquiring.

1. The 2nd Grenadier Regiment N. I. has been located in Aden crater since January 1st, and the corps has had no movements during the past year.

2. Detachments are furnished to the Isthmus—Aden and to Perim Island, which are relieved after two months' absence from camp. The Perim detachment occupies, it is said, a badly ventilated fort, which is almost uninhabitable when the wind is northerly. Pendalls are provided for the Isthmus detachment, and resemble the pendalls in camp, but the floors have not been recently repaired.

3. Aden peninsula, in the province of Yemen, is situated in latitude 12°47′ north and longitude 45°10′ east. A narrow bank of sand, about 1,500 yards long, connects it with the mainland, and a chain of bold precipitous rocks of very irregular outline and unequal heights and of dark-grey colour, running or lying west and east, and forming an irregular ellipse, forms its mosts prominent and characteristic feature. The highest point ("Shum-Shum") of the range is about 1,775 feet above the sea, and acuminated ridges converging and an occasional wider plateau complete its outline as you view it from the Crater. The rock is deeply pitted or hollowed into caves. Aden is about fifteen miles in circumference, six miles in length, and three miles in width, and towards west and south it is fenced with forts and batteries. Its natural trepartite division into Crater, Isthmus, and Steamer Point, which do not intercommunicate directly, is still maintained by rocky barriers of considerable height and immense thickness. But for strategic purposes communications by means of tunnels and cuttings of the rock have been opened, and easy access is thus gained to the different parts of the peninsula. The main roads leading to the different parts are provided with gates, which can be opened and shut at pleasure.

Aden is of volcanic origin, the immense and varied igneous rocks surmounting the Crater attesting to the violence and power of the forces which produced it. Aden camp is situated in the Crater, is irregularly spherical in form, in diameter about one mile, and it is surmounted by dark-grey precipitous rocks which completely encircle it, except on its south-east aspect, which is to a small extent open.

On the sloping crest of the rock, where sufficient space can be found, bungalows are erected which promise pure sea air, steady breezes, and greater comfort to their favoured occupants than houses situated in the Crater can offer to others. In some places at the side and at various heights above the Crater immense crevices, dislocations, and gorges are found, which form the basis of the far-famed Aden tank. The geological formation is trap with superimposed layers of pumice and belts or bands of white sandstone, granite—tough and hard, and carbonate-of-lime crystals, imbedded laterite and lime, and mixed detritus fused into conglomerate, which leaves no trace of its original stratification: traces of iron and sulphur are found

Soil can scarcely be found in the Crater ; the *debris* of the rock forms a fine dust merely from attrition, which, in the absence of rain and vegetable mould, is incapable of being transformed into soil or supporting vegetation. In certain localities (moist and sheltered) a few stunted shrubs can be occasionally seen. But there is neither soil nor vegetation in the Crater of Aden. Sand, gravel, and fused pieces of igneous detritus constitute the surface covering of the Crater. There is neither sub-soil water nor sewage in camp.

There are many wells in camp, Aden, but in all of them the water is so brackish that it is unfit for domestic use. An annual rain-fall is unknown here, but after long intervals of time—it may be years—it rains heavily for an hour or two, and water is thus obtained, collected, and stored in tanks for drinking and cooking purposes. Water conveyed in an aqueduct, ten miles in length, from Shaik Othman is also supplied. It is slightly brackish, and is not much in favour as drinking water, but it is fit for washing, &c. A third source of supply is condensed water, which is served out to the residents when the supply of tank or rain water fails. The water in Aden is not considered by the residents to be wholesome ; it is neither inodorous nor tasteless, nor clear and sparkling as good water should always be. After rain water collects rapidly in the Crater, as it forms the main water-shed ; and means of discharging it in large open drains have been found, and an efficient drainage of camp is thus secured.

4. As the Crater is encircled by igneous rocks, which absorb and radiate much heat, it follows that the residents must be subjected to an abnormally high temperature both by day and night, and to a stagnant and impure atmosphere as well, as there cannot be from physical causes any free and complete perflation of air. A predisposition will thus be induced in individuals to suffer from such diseases as are characterized by marked deterioration of the nervous and vascular systems, loss of nerve tension. The climate in the cold weather is cool and pleasant, but it has no tonic nor invigorating effect. In the hot weather it is said to be exceedingly hot, oppressive, and exhausting, and as it is so protracted (eight months' duration) the injurious effects of the Aden climate become more apparent as the season advances. Temperature { Highest in July, 102° / Lowest in January 73°. } Rain total, 1·89. Wind S.W. and N.E. monsoon.

5. The sepoys are accommodated in pendals in parallel lines, permanent buildings, roof flat and white-washed, which are subdivided into quarters for the unmarried sepoys and for the wives and families of married sepoys.

Lines.

For the former there are 24 pendalls. Each pendall is divided by a central parallel partition, its superficial area is 1,452 feet and cubic space 14,157 feet, and it is supposed to lodge 22 men, giving each man 643 cubic feet. The families' pendalls are 12. Each pendall for married people contains 14 rooms, and allows for each family 945 cubic feet.

All the pendalls are well ventilated by roof and sides and doors, but have no windows.

The pendalls in camp and Isthmus have verandahs and a plinth six inches; they are in a good state of repair, but for want of surface drains they are subject to flooding after heavy rain of more than one hour's duration.

At either extremity of the block, and contiguous to it, are detached buildings, native officers' quarters, with latrine and urinary to each. Each house has a superficial area of 202 feet and cubic space of 2,272 feet, ventilation by windows and doors, but there is no roof ventilation. In material and construction it resembles any one of the lines of pendalls, and differs only in extent of space. It offers good accommodation to a native officer, but it is hot, and the atmosphere stagnant and oppressive during the hot season.

The pendalls are placed in parallel lines directly behind the native town, and as regards ventilation they must occupy a most unfavourable site, excluded, as they are, on the one hand from the sea air, which is admitted into camp on this side only, and on the other hand exposed, as they are, to the vitiated atmosphere and other impurities which are freely generated in native towns.

The lines should be in echellon in front of the native town, and not at right angles to and behind it.

There is no regimental bazaar in Aden. The native town contains about 20,000 inhabitants, and there is a large floating, polyglot population composed of men who come here either to trade or to labour. The streets are moderately wide, fairly clean, but redolent of camels and spices, &c. A large bazaar composed of many nationalities is established here, where supplies (daily) of all kinds are to be obtained, and various articles of merchandise bought and sold.

Surface drains have not yet been made, and there is no drainage in the lines. Tanks are not in use in the lines.

6. In a cantonment where there is neither annual rain-fall nor vegetation of any kind the difficulties of conservancy and sanitary arrangements are very much reduced. Regimental latrines are provided for the sepoys, but their distance from the lines must be at times a serious inconvenience. Iron pans (dammered) are in use, and the contents are emptied into large iron buckets, which are daily transferred to the filth-cart for removal to an appropriate place, Halket's Bay. All excreta, liquid and solid, are removed daily. The latrines are fairly clean, but the smell is offensive both in and near them, and the free use of deodorizing agents is plainly indicated, although not yet sanctioned. To lay the dust and sand the roads and streets are watered, but, as the surface of camp generally has a similar constitution, the benefit derived from the arrangement is not very appreciable.

The establishment of a lock-hospital has done much good, and amongst the sepoys only five cases of venereal disease occurred. There is a small-pox hospital conveniently situated, and a site for a cholera camp has also been fixed, and measures for segregation of cases of infectious and contagious diseases would be at once adopted. In camp all the sewage is removed in tank carts.

7. Rain water stored in tanks is served out for domestic use when it can be procured. For bathing and washing, well water (brackish) and aqueduct water (brackish) are supplied. Condensed water, when rain water cannot be obtained, is provided for the use of the garrison. The rain water gets impregnated with birds' excreta (kites), &c., and other animal substances, as it traverses the surface or permeates crevices of the rock before it reaches the tanks, and again it acquires impurities from the dirty and badly-cured skins or mussacks of the bheesties or water-carriers, and is very unpalatable.

Condensed water is neither palatable nor wholesome from absence of salts, carbonic acid, and contact with atmospheric air, but it is very much improved when it is surcharged with carbonic-acid gas. Although the actual occurrence of any specific disease cannot, so far as I know, be traced to drinking Aden water *per se*, the practice of drinking it is so strongly deprecated by residents in general that it has not been strictly tested; but as it is particularly nauseous and unpalatable it is not likely to be wholesome. The water in use now should be speedily replaced by water of good quality brought in pipes or aqueduct from Arabia, and this, it appears, is the only means practicable of introducing good potable water into Aden. The scheme would, doubtless, be costly, but in improving Aden the element of expense has not always been held to be of paramount importance.

Water-supply from tanks must always be precarious and insufficient in Aden, where there is no annual rain-fall, and condensed water cannot be held to be a sufficient substitute for constant use in any case.

8. The ration of the sepoy is provided by Government free of cost. It consists of dall 4 ozs., wheaten flour 1 lb., ghee 2 ozs., rice 12 ozs., salt $\frac{2}{3}$ oz., firewood 3 lbs., cocum $\frac{1}{2}$ oz., curry-stuff $\frac{1}{2}$ oz., vegetables (pumpkin, radish, brinjalls, bendees, and bajee) 7 ozs., rain or condensed water 2 gallons, and well water 3 gallons. Under this regimen he maintains a fair standard of health if he consumes his daily allowance. But if the family be large the sepoy's share must be small, and he is likely to show the signs of insufficient food and general cachexia aggravated by climate. A regiment with its complement of fighting men alone (wives and families being left behind) should be embarked for service in Aden in the same manner as soldiers embark for foreign service in a foreign country. Were this principle adopted, the sepoy would have his ration for his own individual consumption, and would not suffer from insufficient food. Perhaps a little variety in the present dietary might advantageously be introduced. Potatoes and mutton twice a week might in part replace the farinaceous part of food issued daily. Vegetables are scarce and of inferior quality, and dear; ghee is double the price it was a short time ago; mutton coarse, poor, and inferior quality is procurable.

9. Clothing is adapted to climate and season of the year. But in most instances the sepoy wears a cotton native dress in preference to his uniform when he is off duty and can consult his own comfort.

10. New rifles, Snider's, have been recently served out to the regiment; and, as it is necessary for the sepoys to perfect themselves in the use of their weapons as quickly as possible, the number of parades has been increased since 1st November. The duties of the regiment at other times correspond with the usual routine duties of parade, guards, sentry, and orderlies—work generally performed by troops in garrison. In the cold season a regular course of drill and musketry instruction is gone through, but running drill is not practised in Aden. In the hot season, owing to the depressing influence of climate, very little parade work is attempted. But extra guard duty is imposed in hot weather, as it is deemed imprudent to expose European soldiers to the direct rays of the sun at this season at the arsenal and main guard.

The average number of nights in bed for the men in camp is $4\frac{3}{4}$, for those at the Isthmus (two companies' strength) 3, and for the Perim detachment 10 nights in bed. Thus the duties cannot be said to be very heavy, and their performance cannot directly exert any injurious influence upon the health of the sepoys.

11. The more robust—Sikhs and Punjaubees chiefly—find amusement and exercise in practising gymnastics, single-stick, wrestling, jumping, and running; but owing to the enervating and depressing influence of the climate the practice is by no means common, nor in the case of very many would it be advisable to encourage it. Again, in the matter of occupation, a few only have energy and zeal enough to induce them to undertake extra work, and this of the lightest kind, such as shoe-making and mending, caning chairs, gilding and making or mending clothes.

12. The cells for the prisoners are near the quarter-guard. Each cell has a superficial area of 100 feet and cubic space 1,300 feet—well ventilated and suitable for a lock-up room.

13. No marches have been undertaken during the year.

14. The hospital occupies an excellent site on open ground. The wards are lofty and wide, with stone pavement and verandah. The dimensions of the building are—length 150 feet, width 24 feet, height 25 feet, superficial area 3,600 feet, and cubic space 90,000 feet. It is supposed to contain 50 men, giving each man 1,800 cubic feet. The building is now being repaired, and two-thirds of it is unroofed, and the walls in part repaired to enable them to bear the weight of a tiled (English) roof. As a permanent building with tile roof it will afford to the patients under treatment excellent accommodation and as much comfort as could be wished.

15. I have not heard what system of ventilation is to be adopted with regard to it, but as it is in charge of an Engineer Officer, it will, doubtless, be efficiently ventilated.

I am very sorry to observe a large building, destined for a European mess-house, in too close proximity to, and directly to windward of, the 2nd Grenadier Regiment Hospital, is rapidly being raised. The open position and excellent site of the hospital as it stands or stood will no longer secure the steady sea breeze and sense of coolness and comfort to the inmates of this hospital.

16. The sick of the Sappers and Miners are treated in the 2nd Grenadier Regiment Hospital, but as the hospital is large and commodious there is never likely to be over-crowding, and there is ample room for the sick of both in it.

17. The usual complement of out-houses is attached to the hospital for the accommodation of hospital assistants and 2nd class hospital servants, and an excellent bath-room for the use of patients.

The accommodation is ample and capable of supplying all ordinary requirements as regards space and ventilation, and in very few native hospitals has better provision been made for the wants of patients.

18. In the matter of conservancy the strictest attention is given to details as to cleanliness and comfort of the inmates—medication, dict, ventilation, and means of ablution. The contents of the latrines are removed daily in filth-carts beyond camp limits, and deodorizing agents are freely used in the latrines. The fittings (dammered iron) of the latrines are satisfactory, and are kept clean by the sweepers. There is no urinary attached.

19. The Government allowance of sweet and brackish water is supplied to the patients in the hospital, and is found to be sufficient, the former for drinking at the rate of 2 gallons per man, the latter for ablution and washing at the rate of 3 gallons per man daily. The water-supply is derived from the sources already indicated (*vide* No. 7).

20. On the 31st December 1873 the total number of patients in hospital was 62. The total number of admissions for the year under review was 440 the average daily sick 18·2, and average daily per cent. of sick 2·86. In the month of January, it may be noted, the largest number under treatment in hospital is observed, and the largest number of admissions into hospital took place in the months of January and February. Many were re-admissions for ague. Subjoined in a tabular form will be found a list of principal varieties of disease treated and number of admissions for each :—

	Diseases.					
	Ague.	Debility.	Scurvy.	Rheumatism.	Bronchial Catarrh.	Dysentery.
Number of admissions	155	43	25	13	15	11

From which it appears that diseases of classes A. B. prevailed, and admissions for them most frequent in months of January and February. Mortality.—Six deaths have to be recorded, showing mortality per cent. to treated 1·19 and admissions for year 1·36. The number invalided is 59, many of them men of short service and worn out. Of these 34 were prematurely old and worn out; the other 25—from scurvy, affections of head, chest, and abdominal viscera—were unfit for service.

21. If we accept ague as the cause of most admissions into hospital during the year 1874, there is assuredly no endemic cause of the disease—no constant factors (local), out of which the elements of the disease could be evolved in Aden, as the exciting or proximate cause. Hence it must be assumed that the disease had been imported from India or elsewhere, and that slight or trivial causes, as is so well known, re-induce an attack when a predisposition exists owing to a previous one. Again, it is asserted that the disease was contracted *de novo* during the expedition to Lahej in November 1873, and since that period there has been a proclivity to that form of fever. Amongst the sepoys of the Lahej expedition a severe form of fever, of the quotidian type, chiefly was found to prevail, induced in part through exposure to cold and damp, and in part the effect of malaria and bad water. Next in importance may be noted scurvy, which is directly the cause of 25 admissions, and indirectly influencing by a cachectic state of system most of the diseases observed in Aden. As to the cause of the prevalence of the disease in Aden, a combination of conditions would appear to contribute: we would instance the water-supply, its quality, either an excess or absence of salts; the vegetables, green, which are woody (fibrous) and undeveloped; a too sparing use of animal food, fresh meat, milk, and eggs; and the exhausting and enervating nature of the climate. Dysentery seems to have been in most instances (7) contracted by the detachment on service near Lahej, and was probably induced by malaria and cold and damp and bad water. The remaining four cases had their origin in Aden.

Hepatitis is infrequent in Aden. Its most frequent cause is malaria, and cold and damp and imprudent exposure after violent or prolonged exercise. Debility furnishes a large number of admissions, the result of ague, scurvy, and climate, and insufficient food as to quality, quantity, or both.

22. In the annexed table the cause of the mortality is given; it will appear to be due to a variety of causes :—

	Diseases.						
	Ascites.	Phthisis, pneumonic.	Ague and Bronchitis.	Scurvy and Scirrhosis of Liver.	Paraplegia.	Hepatitis.	Fatty Degeneration of Heart.
Deaths, 6 in hospital and 1 in lines...	1	1	1	1	1	1	1 (Died in the lines.)

23. Mortality is greatest among the Hindus; of 7 deaths recorded, 6 Hindus and 1 Mussulman.

24. Rain falls in Aden so sparingly, and at such long intervals of time upon a barren rock and sand and gravel, that its influence is inappreciable, except the slight temporary inconvenience it causes the occupants of badly-constructed dwellings, which are never water-tight. Rain-fall—January ·20, August 1·69; total 1 inch and 89 cents.

25. During the past year there has been no epidemic.

26. Vaccine lymph is said to deteriorate so rapidly in Aden in the hot season that although vaccination is regularly performed upon children of a large civil population (20,000) in the native town, the supply of lymph is with the greatest difficulty maintained, and at times it becomes exhausted; or, more correctly speaking, the virus seems to exhaust itself under the influence of climate as the hot season advances. In the lines of the 2nd Grenadier Regiment N. I. 15 children are unprotected. Throughout the year, 9 successful vaccinations (primary) have been performed. Revaccination has been performed with varying success: out of 118 operations only 9 were successful.

27. Sickness to the extent of requiring admission into hospital does not prevail to a large extent at present, and on this account the general health of the sepoys may be considered good. The men, however, look delicate and are unable to bear much physical exertion, or to sustain prolonged muscular exertion, as was proved during the expedition to Lahej, when even short marches over-taxed their power of endurance, and camel carriage had to be procured for many to enable them to cover short distances (under ten miles). At the present time the physique of the men seems below par; they have lost flesh, as is evidenced by their dress hanging loosely upon them, and have lost energy and vigour, as may be seen by their languid and undecided movements, and their accustomed exercises and amusements are neglected by them. The physique of the men, I am informed, has deteriorated greatly during the past year, and it is not likely that they will improve much during the extra year's service here they have been called upon to complete.

28. From inquiries I have instituted I am unable to find that any special treatment has been adopted, or any new remedy discovered as a curative agent.

29. My local knowledge of Aden is so small, and my opportunities of acquiring information so few since my arrival here, that I have no special observations to offer other than have been already submitted in my answers to the preceding questions. I beg, however, to forward Surgeon Welsh's remarks, who is surgeon of the regiment, and held medical charge till 7th November 1874.

30. Briefly in a *resumé* it may be stated that Aden climate affects individuals indirectly by its cumulative effects; it undermines the constitution, and it may be both directly and indirectly a cause of disease; that residence in Aden conduces, owing to quality of food, to scurvy and debility; and that ague, which is also common in Aden, is for the most part an imported disease, as might also be affirmed of dysentery and hepatitis; and that bad vegetables, bad water, and insufficient food and an enervating climate are the main factors of the diseases which prevail here amongst Europeans and natives.

31. The pupils (2) attended Government school daily. At the hospital they had frequent exercises in dictation, reading, arithmetic, materia medica, compounding drugs, copying and preparing returns, bandaging, and they had many opportunities of observing the diagnosis and treatment of simpler forms of diseases during the official visits of the Medical Officer.

Remarks by Surgeon Welsh on handing over Medical Charge of H. M.'s 2nd Grenadier Regiment N. I.

Ague.

When the regiment was stationed at Poona in 1872, the number of admissions to hospital for ague was 277; the number of admissions during 1873, the first year spent by the regiment at Aden, was 194, and during the past ten months of the present year the admissions only number 143.

The Lahej expedition, however, was the direct cause of 72 admissions in 1873 and 133 during 1874. If that expedition had not taken place there would have been a decrease of 155 in the admissions during 1873, and of about 250 during 1874, as compared with the year 1872. These figures go far to prove that the men do not contract malarious disease at Aden, and that those who are subject to it throw it off during their tour of duty here. The admissions for ague during the ten months were as follows:—January 64, February 25, March 26, April 10, May 4, June 2, July 2, August 9, September 1, and October none.

Lahej Expedition.

To give some idea of the amount of sickness caused by the Lahej expedition I may mention that the strength of the detachment which left Aden on the 27th October 1873 was 139, and it remained at Hota, the capital of Lahej, 21 miles from Aden, until 11th December, when it proceeded to Zaida about 13 miles distant from the capital, where it camped for about six days and returned to Aden on the 20th December. A reinforcement of 103 men left Aden on the 10th December and returned on the 18th of the same month. The admissions to hospital while on field service were 34 in number—30 for ague, 2 for contusion, 1 for bronchitis, and 1 for dysentery. In addition to these, many men who suffered from ague were treated as out-patients.

After the return of the expedition 76 of the men who had been at Zaida, and 37 of those who had only gone as far as Lahej, were admitted to hospital, *i.e.*, 54·6 per cent. of the former and 35·9 per cent. of the latter, and of the total number (242) who took part in the expedition no less than 46·6 per cent. required admission to hospital. Again, 31 were admitted twice, 15 thrice, 6 four times, 2 five times, and 1 six times, so that the total admissions after the return of the expedition numbered 205, or 84·7 per cent. Had the men remained in the interior a week longer than they did, there can be no doubt that the majority would have been prostrated by illness and rendered utterly unfit for duty.

Of the 205 admissions ague was the cause of 178, dysentery of 7, diarrhœa 1, debility 14, rheumatism 2, bronchial affections 2, and ascites 1. Several of the ague cases were complicated with dysentery, others with bronchial affections, and almost all the dysentery cases with ague.

The type of the ague was quotidian, very severe, with all three stages well marked, confining the patient to hospital several days, and leaving him in a very debilitated condition. In many bilious-vomiting, and muscular pains were persistent; but the head symptoms, observed in many Europeans who suffered from the fever, were absent. In two cases of dysentery the patients in the course of their illness were reduced almost to death's door by severe choleraic symptoms, which the usual remedies failed to check, but which subsided rapidly on the administration of large doses of quinine.

The expedition was either the direct or indirect cause of sending 5 men on sick leave, of invaliding 1, and of 2 deaths.

Scurvy.

The admissions for scurvy during the ten months under review were 21 in number, and occurred as follows:—January 3, February 1, March 1, April 1, May 1, June 3, July 5, August 1, September 3, and October 2. Of these cases 5 were re-admissions for the same disease, so that the actual number of men admitted was 16, which compares favourably with the corresponding period of the preceding year, during which the admissions numbered 48 and the actual number of men treated 41. Several of the cases treated were very serious, both constitutionally and locally. This disease was not the sole cause of any deaths in hospital, and it was only found necessary to grant 4 of the men who suffered from it sick leave to India. All 4 were allowed six months' leave; 1 left in January, 2 in June, and 1 in July, and the average period spent by each in hospital was 20 days. Besides these, scurvy was the immediate cause of 1 man being invalided at head-quarters in the month of August and 2 in November. The experience of the past ten months has been that of previous years, viz., that when a sepoy becomes seriously affected with scurvy treatment is of little avail, and he rarely succeeds in shaking off the disease at Aden. Change to India for six or nine months meets with litle success, and, were it not that it might appear harsh in the eyes of the sepoy, the better plan would be to invalid him at once. It may be interesting to note here the results in the cases of the men who were granted sick leave during 1873:—

Number.	Rank.	Disease.	Length of Service in years.	Remarks.
1	Private	Bronchitis ...	$15\frac{5}{6}$	Died in India.
2	Do.	Scurvy	$9\frac{7}{12}$	Returned to duty.
3	Do.	Do. ...	$5\frac{1}{4}$	Died in India.
4	Do.	Carbuncle ...	$15\frac{2}{3}$	Invalided in Bombay.
5	Naique	Diarrhœa ...	$5\frac{1}{3}$	Died in India.
6	Private	Debility	$16\frac{7}{12}$	Returned and died in hospital.
7	Do.	Do.	3	Died in India.
8	Subedar	Leprosy	$33\frac{5}{6}$	Invalided in Bombay.
9	Private	Asthma	16	Do. do.
10	Do.	Debility	16	Do. do.
11	Do.	Scurvy	16	Do. do.
12	Do.	Do.	$15\frac{7}{12}$	Died in India.
13	Havildar ...	Do.	$24\frac{7}{12}$	Returned to duty.
14	Private	Do.	$19\frac{7}{12}$	Do. do.
15	Do.	Do.	$15\frac{2}{6}$	Died in India
16	Do.	Do.	17	Invalided in Bombay
17	Do.	Do.	17	Do. do.
18	Do.	Do.	6	Do. do.
19	Do.	Do.	$15\frac{7}{12}$	Died in India.
20	Do.	Anœmia	$8\frac{2}{3}$	Returned to duty
21	Do.	Scurvy	$17\frac{7}{12}$	Do. do.
22	Naique	Do.	16	Invalided before going on sick leave.
23	Private	Do.	17	Invalided in Bombay

The regiment was inspected frequently during the months, and all men showing a tendency to scurvy were placed on the "lime-juice list." The average daily number on this list was five, and the daily allowance to each was two ounces. With regard to the diet of the sepoy, I cannot add to what I recorded in my annual report for 1873.

Debility.

After ague and scurvy the only other head under which a large number of admissions has taken place is that of debility. Several of the 43 admissions were for debility after repeated attacks of ague, and many were re-admissions in the case of weedy sepoys enlisted in 1857, who, induced by the present pension rules and aided by indifferent constitutions, succeed by means best known to themselves in getting into such a condition that they are only fit for the hospital.

Shoe-bites.

Cases of simple shoe-bite have been numerous; but the men are not admitted to hospital, as, on the recommendation of the Medical Officer, they are permitted to perform their duties with naked feet.

Sick Leave.

In nine cases leave to India was granted; the particulars are as follows :—

Number.	Rank.	Disease.	Date of Departure.	Length of Service.	Days in Hospital.	Amount of Leave.	Remarks.
1	Private ...	Scurvy ...	15th January...	16 years.	23 days ...	6 months ...	Invalided in Bombay.
2	Do. ...	Debility ...	2nd April ...	10 do.	58 do. ...	9 do. ...	
3	Do. ...	Abscess, rectum	Do. do. ...	10 do.	33 do. ...	9 do. ...	
4	C. Havildar	Debility ...	6th May ...	21 do.	90 do. ...	Invalided before leaving Aden.	Died in Bombay.
5	Private ...	Scurvy ...	17th June ...	7 do.	14 do. ...	6 months ...	
6	Do. ...	Do. ...	17th do. ...	10 do.	15 do. ...	6 do. ...	
7	Do. ...	Ague ...	9th July ...	9 do.	25 do. ...	6 do. ..	
8	Do. ...	Scurvy ...	9th do. ...	9 do.	27 do. ...	6 do. ...	
9	Do. ...	Pyœmia ...	2nd September.	11 do.	88 do. ...	9 do. ...	

Invaliding.

Three special invaliding Boards assembled during the year: the first on 17th January, the second on 29th April, and the third on 3rd August. By these 2, 6 and 4 men, respectively, were invalided for the causes given below:—

Causes of Disability.	No.	Average Age.	Average Service in Years.
1st Special Invaliding Committee.			
Chronic laryngitis	1	35	16
Phthisis pulmonalis	1	35	16
2nd Special Invaliding Committee.			
Broken-down constitution...	3	37	18
Chronic bronchitis	2	34	16
Hemeralopia	1	34	16
3rd Special Invaliding Committee.			
Chronic bronchitis	1	35	17
Broken-down constitution...	1	38	19
Fatty degeneration of heart	1	36	17
Functional disease of heart and scurvy	1	39	21
Total ...	12		

126 men, the majority of whom had been enlisted about the year 1857, were brought before the annual regimental committee, and of that number 39 were sent before the Medical Board, who pronounced all of them unfit for further active service. The following are the particulars:—

Causes of Disability.	Number.	Average Age in Years.	Average Service in Years.
Scurvy	2	38	19
Rheumatism (syphilitic)	1	25	6
Diuresis	1	36	18
Leprosy	1	37	17
Weak and irregular heart	2	37	17
Deformity of right thumb	1	37	17
Scirrhosis of liver	1	38	17
Broken-down constitution...	16	38	17
Worn-out constitution	14	46	27
Total...	39		

The following cases were invalided in India :—

Causes of Disability.	Number.	Average Age in Years.	Average Service in Years.
Scurvy	2	36	17
Scurvy and paraplegia	1	35	17
Scurvy (followed by broken-down constitution) ...	3	32	13
Total ...	6		

Malingering.

In February one man was tried by court-martial for malingering, convicted, and sentenced to six months' hard labour and dismissal from the service with ignominy, but the sentence was entirely remitted by the Brigadier-General in consequence of irregularities in the proceedings of the court.

Deaths.

During the ten months there were 9 deaths—6 died in hospital, 2 in India, and 1 in the lines. The causes of death and the age and length of service of those who died were as follows:—

Rank.	Causes of Deaths.	Place of Death.	Age.		Service.	
			Years.	Months.	Years.	Months.
Private	Ascites	Hospital	19	7	1	7
Do.	Phthisis pulmonalis	Do.	19	2	1	2
Do.	Ague and bronchitis	Do.	35	4	16	4
Do.	Paraplegia	Do.	37	7	16	7
Do.	Scirrhosis of liver	Do.	35	8	16	8
R. Boy	Hepatitis	Do.	13	10	1	10
Havildar	Heart disease...	Lines	38	10	19	10
C. do.	Debility	India	41	3	21	3
Private	Do.	Do.	20	11	2	11

Sanitary State of Lines.

In May I brought to the notice of the Commanding Officer, 1st, that the pendalls had not been white-washed inside since the year 1871, that the floors were in bad repair, and that the walls outside had apparently not been cleaned in any way since the arrival of the regiment; 2nd, that the walls of the cook-rooms might with advantage be reduced in height, and moveable matting applied for use in dusty weather, as during the hot weather the men employed in cooking suffered much from the intense heat; 3rd, that the ventilation of the armourer's workshop was unsatisfactory, the wind for about eight months of the year being shut out, and that two additional windows were required; 4th, that covers for the regimental water-casks were urgently required; 5th, that the urinals were in a most unsatisfactory state, the raised soil on which they stale never being changed, and the ground for several feet around being saturated wirh urine; 6th, that the construction of the latrines was faulty, and that it was imposible to keep them clean without an allowance of disinfectants; and, 7th, that surface drains were required in the lines. Since the above remarks were made greater attention has been paid to the condition of the latrines and urinals, and there is a prospect of an allowance of disinfectants being granted. The pendalls are now being white-washed and repaired.

No. 2 Company, Native Artillery.

ADEN.—In medical charge of Surgeon-Major J. GRANT; Strength, 75.

1. No. 2 Company, Native Artillery, left Rájkot on the 5th November 1873, and arrived at Aden on the 2nd February 1874, and since then have been quartered at Steamer Point.

2. They have given no detachments.

3. Steamer Point lies at the south-western extremity of Aden on a long elevated ridge of land about 100 feet above the level of the sea. It has a free exposure on all sides except the east, where there are high rocks varying from 1,000 feet to 1,700 feet, the highest point in Aden. It overlooks a large fine harbour, which is formed by a long neck of sand that joins Aden to Arabia Felix. The soil is perfectly barren, consisting only of sand, in which are imbedded in many places very long boulders of lava.

There can be but little doubt that Steamer Point is the result of volcanic eruption, the Crater being situated about a distance of five miles in camp. From what I have already said it will naturally be concluded there are no natural products.

There is hardly ever to be seen a green thing in the place. Except during the months of May and September, when the air is very still, the climate at Steamer Point is not very disagreeable; it has the benefit of two monsoons during the year.

The south-west usually begins in April, dies away in May, and then goes on till the end of August. The north-east usually begins about the middle of October and continues till the end of April.

Steamer Point derives most benefit from the south-west monsoon, as the rocks on the east side form more or less of a barrier to the reception of the north-east one. There are no wild animals, only a few small foxes and monkeys.

4. The climate at Steamer Point may certainly be said to be very healthy, causing no particular form of disease; but in cases of chronic disease coming from India, the climate, and certainly the barren and unpleasant appearance of the place, tend to aggravate cases of hepatic disease. When the cold weather arrives the climate is not sufficiently cold to restore cases of disease of some standing to good health. Thus, therefore, when disease is at all protracted the convalescence is sure to be slow.

5. The lines of the Native Artillery are in a flat sandy piece of ground, about 400 yards south of the European barracks.

The quarters consist of four buildings placed endways to each other, and have a northern and southern aspect. They are all of the same construction, and the following is the size of each:—cubic feet 186·30, superficial area 2,310 feet. Each quarter has on either side three doorways and three windows opposite each other, besides three oblong holes through the walls near the ceiling at each end and side of the building. There is also slight ridge-ventilation at the roof. The ventilation for each quarter is sufficient. There is no regimental bazaar. About a mile from the lines by the road there is at Steamer Point a small native village. As there is scarcely any rain ever at Aden, drainage in the lines is unnecessary. There are no tanks near the lines.

6. A conservancy cart comes to the lines once daily and takes away the sweepings of the barracks and native officers' quarters. There are two latrines, one for the men and the other for the women and children. The one for the former is fully 800 yards from the lines away eastward at the entrance of a wide ravine; the other is about half that distance. At the east end of the lines there is a urinal for the men. The contents of the latrines and urinals are emptied twice daily at 4 A.M. and 4 P.M. by the sweepers into places dug several feet below the surface of the ground in a deep ravine about half a mile from the lines. The conservancy and sanitary arrangements are quite satisfactory.

7. The water for the Native Artillery is supplied by the Commissariat. Each man and woman is allowed 3 gallons of condensed water for drinking and cooking and 2 gallons for ablutionary purposes. The former is obtained from the Government Condenser at the Point, and the other is conveyed by an aqueduct from the interior of Arabia Felix. Each child gets

2 gallons of condensed water and 3 gallons of brackish water. The quality and quantity of the water-supply is good and sufficient.

8. The ration, which is free, has consisted of the following articles during the year:—flour 1 lb., dall 4 ozs., rice 14 ozs., ghee 2 ozs., cocum 2 ozs., salt $\frac{2}{3}$ oz., curry-stuff $\frac{1}{2}$ oz., and wood 3 lbs. These articles have invariably been of good quality and quite sufficient.

9. Each man's clothing has consisted of white drill trousers and a blue serge tunic for the hot weather, and for the cold weather a blue cloth tunic and pair of trousers. He has also a forage cap, which in the hot weather has a white cover on.

The clothing is quite suitable for the climate of the station and state of the weather.

10. The duties have consisted of morning parade and afternoon roll-call, with occasionally fatigues. The company has furnished two guards day and night for the year, viz., the quarter-guard and the magazine-guard. They each consist of a naique and four men, but the latter one has an additional one put on at night. Two men go to Sera Fort every Monday, and remain there till the following one, for the purpose of firing the gun. The duties do not in any way act injuriously on the health of the men.

11. The duties do not in any way interfere with the men taking exercise.

The men do not seem to care for amusement, and they don't work at anything in particular.

12. There are no lock-up rooms. There is one cell at the end of the guard-room, where men are kept in confinement. It has a measurement of 2,325·00 feet and a superficial area of 305·50.

The ventilation and space are quite sufficient.

13. The company has made no marches.

14. The hospital for the company of Native Artillery is situated on rising ground immediately above the Sanitarium Hospital. It is an isolated *kutcha* building, consisting only of straw mats tied to posts of bamboo with a sloping roof of jawally.

The following is the size of the building:—cubic space 9,720 feet, superficial area 540 feet. It is in the immediate neighbourhood of the Sanitarium Hospital with the different buildings attached to it.

15. It lies east and west, and has six doors, two on each side and one at each end.

There is also at the top, all round between the roof and the wall, open cane-work about three feet deep. This affords ample ventilation.

16. The ward is intended for eight sick men, but it has not had so many in it all the year round; consequently there has been no over-crowding.

17. The accommodation for eight patients is quite ample, and there are no defects about it rendering any recommendations on the subject necessary.

18. At a corner of the hospital is a latrine with two soil localities. The soil and urine are deposited in deep iron trays, with an iron handle attached to draw them out by; the contents are then emptied into a deep filth receptacle and carried to a deep ravine about a mile distant, where it is buried several feet below the surface of the ground. This is done twice daily by the sweepers.

The conservancy is sufficient and strictly attended to.

19. Each man who is a patient in hospital has his allowance of water brought from the lines, viz., 3 gallons condensed and 2 of brackish water. There are no suggestions requisite on this subject.

20. Appended to this report is a tabular statement showing the number of admissions into hospital from the various diseases, the mortality, and those invalided.

21. The sickness amongst the men for the past year has been very slight.

The majority of admissions have been from fever and rheumatism. The first has been owing solely to climatic causes, and the other has most generally been from the sequelæ of the

former. There has been no very acute form of disease admitted into hospital during the year.

22 and 23. There have been no deaths during the year.

24. There has not been a sufficient fall of rain during the year to exercise the slightest influence on the health of the men.

25. There has been no epidemic.

26. All the children have been vaccinated, and it has not been found necessary to revaccinate any of the men.

27. The men have a healthy appearance, and are in excellent condition.

28. There has been no special disease amongst the men during the year.

29. There is nothing to call forth any special observation.

30. The men have enjoyed excellent health since they have been here. Their lines are in a good airy situation, and the sanitary arrangements have been quite satisfactory for the past year.

The following is a classified return of the diseases and deaths of No. 2 Company, Native Artillery, for the year 1874:—

No.	Diseases.	Admissions.	Deaths.	Invalided.	No.	Diseases.	Admission.	Deaths.	Invalided.
15	Ague	13	...	...	484	Diarrhœa	2	...	...
16	Remittent fever ...	1	...	...	524	Splenitis	1	...	...
38	Chronic rheumatism ...	18	...	1	819	Abscess	1	...	...
43	Syphilis, primary ...	3	...	...	...	(5) Guinea-worm ...	3	...	...
37	Muscular rheumatism.	3	...	...	861	Boil	1	...	...
75	Inflammation... ...	1	...	...	1,115	Contusion	2	...	...
...	(c) Sciatica	1	...	...	1,116	Sprain (ankle) ...	1	...	...
146	Amaurosis	1	...	1	905	General debility ...	...	...	1
306	Bronchitis	6	...	...					
377	Gum-boil	1	...	...		Total.....	59	...	3

H. M.'s No. 5 Company, Sappers and Miners.

ADEN.—In officiating medical charge, Surgeon-Major D. SIMPSON, M.D.; Strength, 94.

1. No. 5 Company, Sappers and Miners, occupy lines in upper or western part of the Crater where it becomes narrow and confined at base of the rock. It has had no movement during the year.

2. The Company, Sappers and Miners, furnishes no detachment.

3. The account of the topography and physical geography of Aden generally offered in my annual report of the 2nd Grenadier Regiment applies to the part occupied by the Company Sappers and Miners; the local and atmospheric conditions remain pretty constant and uniform in this part, although on the slopes and crests of the rock mists and even slight showers may be experienced occasionally.

4. Described in my annual report of 2nd Grenadiers.

5. Lines run in parallel rows of eight pendalls, and occupy the upper and back part of the Crater. The pendalls are sub-divided by partitions into compartments or huts for each man. Each compartment is 10 feet square, and gives a cubic space of 750 feet to its occupant.

6. Each native officer has four compartments, and each havildar has two, the same in character as those occupied by the privates. The quarters of married sepoys are a little larger than the others. The pendalls are temporary buildings—bamboo matting and reeds—and are provided with a verandah, front and rear, 6 feet deep. The pendalls run in parallel lines, face the prevailing winds, but they are not placed in echellon. Air is freely admitted by door and rear

and owing to construction and materials of the building it is well ventilated. The lines have recently been repaired, and are in good habitable order. No regimental bazaar is required; no neighbouring villages in any part of camp. Surface drains have not been introduced. In front of the pendalls small shallow pits, filled with stones and covered with sand and gravel, where men bathe and wash, are sometimes observed. The waste water is quickly absorbed and percolates, and at the time of my visit the lines were remarkably clean, and no surface water was anywhere visible. Tanks, iron, for water, in case of fire, are reserved. Conservancy arrangements are very bad. A latrine on the Turkish principle was built about fifteen years since for the corps, and has been in constant use ever since, and has never been emptied nor cleaned. It is an immense cesspool 50 feet deep and about 24 feet in diameter, and surmounted by a tall funnel, which is incapable of discharging its foul effluvia, and if it did, whenever the wind was northerly, it would become a public nuisance in camp. Disinfectants are used in the latrine, but too sparingly to be of much benefit. At the time of my visit, at 8½ A.M., an offensive odour of liquid and solid excreta pervaded the latrine. This latrine has been condemned, but it is used still, as the new latrines have not been completed. In other respects the general conservancy and sanitary arrangements enforced in camp are observed in the No. 5 Company, Sappers and Miners, and are in all respects satisfactory, if a high standard of health of the company be deemed a proof of it.

7. Government allowance of water is supplied, and a well in proximity, where ablution and washing can be performed, is used.

8. Government ration is supplied as in other instances, and if it be consumed by the individual it is ample. It might be advantageously modified, as suggested in my report of the 2nd Grenadiers.

9. The ordinary dress of the corps is worn by the company on duty here. From 5 P.M. to 8 A.M. cloth clothing is worn, and during the day a *merzaie* and black and white cotton trousers.

10. The duties of the company consist in guard and orderly duty. Parades and instructions (practical) in modelling batteries for three hours daily constitute the daily routine work of the company, Sundays and brigade holidays being excepted. The health of the company is excellent, and it would appear to be in no small degree owing to the nature of the work, mental in some small extent but mainly physical, and the recompense or award received. Each sepoy can on an average earn two annas daily for extra work;—no inconsiderable increment to his pay and a healthy stimulus to him besides.

11. Gymnastics and the other athletic exercises are practised; but, in addition to the routine work of modelling, &c., the Sappers and Miners here evince little inclination for employment as tradesmen or mechanics in their leisure hours. For such labour there is no demand here, and little or no money to be made by it.

12. No lock-up rooms are used.

13. There have been no marches during the year.

14. The sick are treated in the 2nd Grenadier Regimental Hospital, and the answers which have been already given to questions 15, 16, 17, 18, and 19 apply equally to 2nd Grenadiers and Company, Sappers and Miners, as the same hospital is common to both.

15. Ague is conspicuously the most common form of disease which has obtained in the company during the year, and the number treated gives 65 cases. Next we would mention scurvy, which gives 6 cases. Two cases of bronchial catarrh, 3 of diarrhœa, 7 of abscess have been treated. The remaining cases would, neither from the number treated, nor from their characters, seem to be of such importance as to merit special notice. Total treated, 101. Average daily sick, 2·4. Proportion of admissions to strength, 81·9. No deaths occurred in No. 5 Company, and no one has been invalided during the year.

16. The principal cause of sickness is malaria, said to have been contracted in Arabia, near Lahej and Zaida, in November 1873, where a detachment 60 strong was sent on field service. Water (brackish) and hard work (road-building) and exposure and damp combined to produce a rather severe form of fever; at the same time scurvy was induced by a combination of the same or similar conditions leading to a depraved state of blood from deficient nutrition. Mutton very poor and innutritious.

17. No death has to be recorded.

18. Rain-fall cannot be said to exert any special influence: unpleasant and putrid odours are experienced after heavy showers, but no injurious effects result, as they are so very transitory and infrequent.

19. There has been no epidemic.

26. Six primary vaccinations have been successfully performed. Re-vaccination has never been performed.

27. The general health of the men is very good; for one and a half month no one has applied for admission into hospital. The interest they seem to take in their work and their desire to earn money for extra work would deter them from applying for admission into hospital for trifling ailments. The physique of the men is good considering the time they have been here and the sickness they have endured in the early part of the year, but they cannot be said to present a robust or very athletic appearance, which you would naturally expect to find in men who have to undergo so much physical exertion and manual labour in the open air.

28. I am not aware that any special treatment has been adopted by Dr. Welsh.

29. I have no special observation to add to the above, but I beg to append Dr. Welsh's remarks regarding the company.

30. At the beginning of the year there was much sickness amongst the Company, Sappers and Miners. They had contracted ague in November 1873 on service in Arabia, and continued to suffer for three months after they returned to camp. They are now in good health, and show a clean bill of health for one and a half month. The system of paying men for extra work might advantageously be extended to other corps, and operatives and mechanics thus trained could be turned to good account when required. A higher standard of health would be thus maintained, and the money obtained could better supply the wants of the sepoy's family.

31. No pupils are attached.

Remarks by Surgeon Welsh on handing over Medical Charge of the 5th Company, Sappers and Miners.

In my report for 1873, I mentioned that from 27th October to 20th December of that year the company gave a detachment of 60 men to "The Lahej Expedition," and that they continued in good health until about the 12th December, the date of their arrival at Zaida, when they began to suffer from severe attacks of ague. From the date of their return to Aden (20th December) until the close of 1873, the admissions to hospital were 29 for ague and 1 for debility, thus accounting for nearly one-half of the total admissions throughout the year. Had it not been for this expedition there would only have been 4 admissions for ague during 1873.

During the past ten months the admissions for ague were 41 in number, 29 of the cases occurring in January and 6 in February. In all the disease was contracted in the interior.

Excluding cases of illness while on field service, the total sickness amongst the men of the detachment was as follows:—42 of them, or 70 per cent., were admitted to hospital, 26 once, 10 twice, 2 thrice, 3 four times, and 1 five times, the total admissions being 69, or 115 per cent. When the troops moved to Zaida, the hot-bed of malaria, three men only of the Sappers were left behind at Hota, which accounts for the sickness amongst them being in excess of that of the Grenadiers. Of the 69 admissions ague was the cause of 67, dysentery 1, and debility 1.

With the exception of ague there has been very little sickness in the company during the period under review.

Scurvy was the cause of 6 admissions, of which number 4 returned to duty and 1 was sent to India on six months' sick leave. The only other instance in which sick leave to India was granted was in the case of a sepoy who suffered intensely, after his return from Zaida, from ague, congestion of the spleen, and anæmia; he also obtained six months. The captain in command of the company did not succeed in shaking off the fever, and was sent by a medical board on sick leave to England for two years.

There have not been any deaths since the commencement of the year, and none of the men have been invalided.

H. M.'s Aden Troop for the Year 1874.

In medical charge 1st Class Hospital Assistant Joetaram Nanabhy; Strength, 87.

The full strength of the Aden Troop is 100 sabres, exclusive of the officer in command. Its permanent head-quarters are at Khor-Mucksor, situated on a narrow strip of land con-

necting the peninsula of Aden with the mainland, and about 2¼ miles in a straight line from the Barrier Gate. The duties of the Troop are by patrolling to keep open the communications with Aden, and by their unexpected presence at different points to instil confidence into the neighbouring country-people and those bringing supplies from more distant places in the interior to the Aden market. During the cool weather the greater part of the corps moves out frequently under the Commanding Officer, and small parties patrol throughout the year. Though the Troop only consists of 100 fighting men, the public and private followers, &c., make up the number in the lines to nearly 300 souls.

3. The lines at Khor-Mucksor are on a level sandy plain between the harbour to the westward and the open sea to the eastward, both about a mile distant, and the site has all the appearance of having been at one time covered by the sea. There is no drinkable water nearer than Aden, except that which passes through the Shaik Othman Aqueduct, within three-fourths of a mile of the lines. This even is brackish, and is issued to the horses and other animals of the Troop, and to the men only for washing and cooking purposes. Salt water can be obtained by digging eight feet, and there is no drainage.

4. The climate in itself is probably more salubrious than any other within fifty miles of Aden. There is very seldom an entire absence of breeze; on the contrary the wind is generally excessive, and the nights, even in the worst parts of the hot weather, are rarely, if ever, unbearable.

5. The space occupied by the lines is about 33,371 square yards. The ventilation of the men's pendalls is defective. The bazaar is close by and abutting on the family lines. It contains three or four shops. The nearest village is that of Shaik Othman, four miles distant. There is a covered tank about 1,200 yards distant from the lines joined to the aqueduct, holding a reserve of some gallons of brackish water. There is no drainage in the lines.

6. The conservancy and sanitary arrangements are as good as circumstances will admit.

7. Fighting men receive 2 gallons of condensed and 3 gallons of Shaik Othman water (brackish), and all followers 1 gallon of the former and 2 of the latter. Both qualities are good of their kind, and the quantity is deemed sufficient.

8. Food of almost every kind and of good quality is, as a general rule, obtainable without any difficulty, and at moderate rates.

9. Cloth and light clothing are worn according to season, the former for some five and the latter for about seven months of the year.

10. Their duties do not seem to affect very unfavourably the health of the men, except on the occasions of their visiting notoriously malarial places like Zaida, on the confines of the Lahej territory, every visit to which is invariably attended with much sickness, repeated attacks of fever, followed by splenitis and other complications.

11. The exercise, amusement, and occupation of the men are sufficient to maintain health.

12. There are no proper lock-up rooms or cells.

13. There is no hospital. One with suitable accommodation for hospital servants is very much required. The present system of dispensing medicine in the standard guard and attending patients in their huts, where no supervision can be exercised over them, is highly objectionable, and tends to swell the sick list.

14. There is no special hospital water-supply; but the hospital assistant, dooly-bearers, and patients draw each their regulated allowance.

15. There has been comparatively little sickness since April of the past year. The sickness in the early part of the year was due to the head-quarters of the Troop having been encamped at or near Zaida. There has been no mortality during the past year. Eight men were invalided during the year, two of them having been pensioned, and the rest, short-service men, discharged on the score of physical unfitness.

16. Rain when it falls, which is but seldom, does not appear to affect the health of the men unfavourably, but tends to render the climate pleasanter, especially in the hot weather.

17. There were 11 children vaccinated during the year, and no revaccination was performed owing to lymph having failed.

18. The general health of the men has very much improved during the last few years, and more especially since April 1874. This is, no doubt, due to the invaliding of all sickly subjects, and the enlistment, in lieu of them, of a finer and healthier class of recruit. With a few exceptions the physique of the men is excellent.

19. Special cases are sent into Aden for treatment by the Medical Officer in charge of the Staff Hospital.

Detachment H. M.'s 2nd Grenadier N. I.

PERIM.—In medical charge of Assistant Apothecary R. WEBB; Strength, 51.

A detachment of H. M.'s 2nd Grenadier N. I., strength 51 men, are located here for two months, relieving detachments coming from head-quarters of the regiment at Aden.

Perim—an island situated at the southern entrance of the Red Sea, and in 12°40'20" N. latitude and 43°25' E. longitude, having the coast of Arabia on the east and at a distance of about one mile, and on the west the coast of Africa some 10 or 15 miles—is about five miles in circumference, and is formed by inlets and numerous promontories; consists of greater and lesser rough, dark, ill-shaped stone, undoubtedly the result of volcanic eruption at some remote period, and without the slightest trace of vegetation owing to the nature of the soil, if so it may be called, and to the great scarcity of rain-fall. The highest point on the island at a conjecture is about 200 feet. There always being a strong prevailing wind at the different seasons of the year, the atmosphere is rendered cool and agreeable. There are neither rivers, water-courses, or tanks on the island, nor any system of drainage.

The above conditions have no effect on climate. The whole of the garrison is located in a fort which is situated on the highest and most favourable position on the island. The accommodation within is ample, ventilation good. There is no bazaar or neighbouring village on the island. The men live in a series of low, long huts situated inside of the fort, which are out of repair, very old, and are built on plinths. There is no arrangement (and none required) for the disposal of sewage on account of the few inhabitants. There are eight tanks in use on the island, four of which contain condensed and four water brought from the neighbouring coasts. There is no system of conservancy, but the sanitary arrangements are satisfactory. The water-supply for drinking purposes is condensed, and is made on the island; it is of good description, pure and wholesome, being filtered, and is issued to troops and European residents in a fairly liberal manner. It is kept in large tanks, and a large quantity always kept on stock. The water used for washing purposes is brought over in boats from the interior of Arabia and Africa, according as the wind for sailing, and is procured from rivers and wells; a large supply is invariably kept on stock; it answers its purpose admirably. The troops are served with rations by the Commissariat Department on a fixed scale, viz., flour, 2nd sort, 1 lb.; rice, 2nd sort, 12 ozs.; dall, 4 ozs.; ghee, 2 ozs.; salt, $\frac{2}{3}$ oz.; vegetables, country, 7 ozs.; curry-stuff and cocum, $\frac{1}{2}$ oz. each; firewood, 3 lbs.; sugar, 1 oz.; per man daily, in addition to which one dram of lime-juice is issued. All are of good quality, and the supply sufficient. Clothing—white cotton and warm is worn when on duty according to the season of the year. Duties are light—occasionally parades and fatigues, which have no baneful effect on health. Exercises are ordinary, no amusements, and occupation is chiefly in-door and domestic. There is one guard-room; no cells; neither are often required.

The hospital is in the fort, and consists of one spacious room which is freely ventilated, and there is no over-crowding. The accommodation is ample, and no improvements or requirements can be suggested. There is no system of conservancy.

For surgery use three gallons of condensed water are provided; when there are patients in hospital they receive their ration of water.

The principal admissions during the year have been from dysentery, ague, and chronic rheumatism, of which there were four of each; all yielded easily to treatment. No casualty, and no men have been invalided.

Rain-fall is unfrequent. No perceptible influence on health. No epidemics, and no persons have been vaccinated or revaccinated.

The men of the detachment now under my charge appear unexceptionably healthy, and from past returns I presume the same. In the present detachment the majority are Mahrattas, and are of middling height, well built, and muscular. The Purdasee caste, of which there are six present, are taller and stronger men.

Comparing the marked decrease of admissions into hospital with the preceding year, there is found a difference of thirty-two; another fact noticeable is that of the marked decrease of scurvy during the year. A latrine is now in course of erection and nearly completed; it is much needed.

Detachment of H. M.'s 21st Regiment N. I.

BASSADORE.—In medical charge of Assistant-Surgeon R. HAKEEM, L.M.; Strength, 12.

The detachment of H. M.'s 21st Regiment N. I. at present serving at Bassadore arrived on the morning of the 8th April 1874.

A topographical description of the station has already been given by me in my report for 1871-72. It may now briefly be stated here that the soil is calcareous and sandy; a layer of hard shell and sandstone extends superficially all over, with slight interruptions, varying from a foot to 15 feet or more in thickness; the sub-soil is a deposit of clay, and is exposed in many places where there are breaks in the stony layer, which are mostly availed of for planting date-trees, &c. The water-supply is from tanks and wells; the former store the rain water, while the latter have springs at depths varying from 10 to 20 feet, which, with the exception of one or two, are of a brackish nature. The drainage is excellent, the soil being sandy, and the ground being elevated and sloping towards the sea. The elevated position of the station, and its being distant from all high rocks, gives it the advantage of being conspicuous and exposed to all breezes, however light they may be, or in whatever direction they may blow. It is owing to this circumstance that the station is cooler during the hot weather than other neighbouring places.

The men of the detachment are quartered in a medium-sized room on the ground-floor; the room is divided into two compartments, with a fair verandah on its two sides. But considering the number of men these rooms hold, the accommodation is very scanty. Certainly the rooms require enlargement in their dimensions, and it would be of the greatest benefit to the men should an upper story be added to the rooms for the men to live in comfortably during the hot weather.

There is no bazaar of any kind in the station, but there are a few petty shop-keepers who live in the station, and carry on a small trade by sale of the ordinary articles of food. There is a small village close to the station which furnishes the men with fish, milk, eggs, &c. The sepoys' quarters are situated in a good position close to the sea-shore on a raised plot of ground, in consequence of which the drainage is excellent. There are no privies erected for the men, but the sea-shore being quite close they resort to it for the purposes of nature, the dirt and filth being completely washed away by the tide. There are three Government tanks sunk for storing rain-water. The supply of water from these tanks is free, and the water is excellent for drinking purposes. The water flows down over a large flat, sloping ground which is of a sandy nature, and since the people do not frequent it, accidental sources of impurities are absent. But the water in its course down carries with it fine sand and muddy particles, which settle down readily at the bottom of the tanks, and as the water is used up the tanks are every year in turn cleaned of all muddy deposit and allowed to store water afresh.

The men are placed on a scale of ration which consists of 2 lbs. of rice, 4 ozs. of dhall, and 2 ozs. of ghee, each man per diem; meat, vegetables, fish, and curry-stuff are totally expunged from the present scale.

It appears to me that the former scale, which included all these items, was far more suitable to the men than the present one; certainly it is extremely difficult and tiresome for one to live on dall and rice and "khichree," since these are the only two kinds of dishes a native can make out of the present scale of ration. In my opinion a ration of a more mixed description, and more varied in its mode of preparation, would be better. I have reported on the subject to the Political Resident in the Persian Gulf, requesting him to get the old scale re-established at this station.

The men are well provided with clothing: on their starting from Bombay each man gets a suit of flannel clothes, consisting of two banians and two drawers; also a looic blanket and a pair of boots; while they are furnished at this station with a Persian cloak each, which keeps them pretty warm during the winter.

The duties of the men are few and light: a guard, consisting of a naik and three sepoys, mounts every morning at the pier, where the coal-heaps are situated. When sickness prevails to a less extent, and the men are in fair health, they are drilled three or four times a week in the mornings. The men generally amuse themselves with playing at "laktees" or cards, and a few of them occupy themselves with sewing clothes. There are no lock-up rooms or cells in the station.

The dispensary consists of a room situated on an isolated spot. Inside, it measures in length 23¾ feet, in breadth 12 feet, and in height 12½ feet.

The room just holds the dispensary tables, medicine press, chairs, and other articles; it does not accommodate any in-patients. The men of the detachment when very ill are visited by the Medical Officer at their quarters; otherwise they attend the dispensary as other out-patients do. The ventilation of the dispensary is free, and is effected efficiently by a window and a door through which when kept open a good breeze is obtained. The dispensary is supplied with rain water from the Government tanks by the station bheestie.

During the year under report the total number of patients treated amounted to 138; of these 3 remained from the year 1873, while the remaining 135 were fresh admissions. Of these 89 were cases of ague, 5 of rheumatism, 4 of scurvy, and 5 of malarious hemicrania, 4 bronchitis, 3 catarrhal ophthalmia, 2 acute dysentery, 3 diarrhœa, and 2 rectal hœmorrhage: the remaining 21 were furnished by other minor diseases.

The fever cases form exactly two-thirds of the total number of the diseases treated. The cases of fever were less than during the preceding year by 13. These fevers were principally of a quotidian type, a few being tertian. The healthiest months were April and September; in the former only 1 and in the latter 2 fever cases were admitted. Four cases of scurvy came under treatment; 3 of these were fresh admissions, while the fourth was a re-admission. Two of the patients became so ill that an immediate change of climate became necessary, and they were consequently at once sent down to Bombay on medical certificate; these cases of survey occurred only in the men of the old detachment, who had already remained about ten months on the station. It was subsequently relieved and sent in April to Bombay. The three admissions for catarrhal ophthalmia were furnished by one and the same patient. The cases of dysentery, diarrhœa, and bronchitis were mild and yielded rapidly to ordinary treatment. The two admissions for rectal hœmorrhage were also furnished by one person. The patient had become weakened by repeated attacks of fever, which induced congestion of the spleen and liver as well as the mucous membrane of the intestinal canal, culminating at last in passive rectal hœmorrhage.

Leaving aside the several injuries and diseases arising from errors in diet, &c., the principal causes of the various diseases embodied in the above report may be said to be malaria and sudden variations of temperature, acting separately or combined.

I am happy to note that there have been no deaths during the year under report.

The influence of rain-fall has a very enlivening and agreeable effect on the whole aspect of the station. The Bassadore station, generally speaking, is rugged and barren-looking, with a very sparse vegetation, consisting principally of small clusters and clumps of date trees, interspersed here and there with the leguminous "kahoors" and cardia plants and also a few zyziphus jujubas and a wild stunted species of acacia. After a shower or two of rain the ground is mantled over with a rich, lively, green verdure of a variegated description. A small herbaceous mallow with a small white flower grows in profusion, for the seeds of which the rock partridges come in large numbers; while composite herbs of various descriptions, with white and yellow flowers, grow in abundance, and contribute no small share in improving the appearance of the place. All this may possess but small attractions to an individual who passes his days in a city of gardens, but it affords a great relief to the wearied eye, which has had to gaze with pain and disgust on a barren and dazzling white soil during the long summer days. After a few good showers of rain the brackish wells are rendered tolerable fresh by dilution with rain water.

The freshness of these wells continues for a couple of months after the rains have ceased. Good heavy showers of rain have a very salutary effect upon the climate, rendering it healthy, fresh, and bracing. They have the effect of washing down the various deleterious poisons, especially malaria, floating about in the atmosphere, which are a source of the numerous indispositions to which men are liable. Should these showers be attended with rapid electric discharges in the air, their salutary effects are further enhanced by the generation of ozone, which is an active agent in destroying most of the noxious poisons

in the air, thus becoming, indeed, a provision of nature for the purification of the atmosphere. Unfortunately during November and December it did not rain, in consequence of which fever was very prevalent among all the villages of the Island of Kishm, as indeed it was all over the Persian Gulf.

During the month of April two cases of small-pox were reported among the Arab portion of the inhabitants of the station; these men came with infection from the Arab coast; happily the disease did not spread.

The detachment does not usually furnish any cases for vaccination, and very few, indeed, for revaccination, since the men are generally vaccinated and revaccinated in their regiment. Three of the men who declared that they were vaccinated when quite young were revaccinated, but without success.

In treating of the general health and physique of the men of the Bassadore detachment, I may safely add that the low-caste Hindus from the Konkan districts, which form by far the larger portion of their number, are, with few exceptions, of a weakly constitution. The principal causes leading to such a physique, are early marriage and partial starvation, either by a diminution of the quantity of food or its inferior quality. As a rule, they commence married life very early; young lads of 16 and 18 are fathers of children, while young girls of 14 and 15 become mothers. This custom cannot have but an injurious effect upon the progeny, which is nearly always weak and puny.

REPORT ON THE PRESIDENCY DIVISION AND ADEN.

By Deputy Surgeon-General JOHNSTONE, M.D.

I.—PRESIDENCY.

The Presidency Division of medical superintendence in the Military Department includes the native troops quartered in Bombay, Tanna, and Surat; also the detachments at Jinjira (Muria), in the Persian Gulf, and on board H. M.'s vessels of the Bombay Marine. In the year 1874 the troops were—

H. M.'s	4th	Rifles	N. I. Detachment.
,,	7th	Regiment	,, Wing.
,,	20th	,,	,,
,,	20th	,,	,, Detachment.
,,	21st	,,	,,
,,	21st	,,	,, Detachment.
,,	26th	,,	,,
Staff and Details.			

Except for relief of detachments there have been no movements during the year.

The average strength of fighting men included in the returns, and as it stood on the 31st December 1874, was as follows :—

Table I.

					Average.	On 31st December 1874.
Detachment	H. M.'s	4th	Rifles	...	... 149·5	155
Wing	,,	7th	N. I.	...	... 319	319
	,,	20th	,,	...	... 628·9	629
	,,	21st	,,	...	... 564	565
	,,	26th	,,	...	... 649	633
Detachment	,,	20th	,,	...	... 17	17
Detachments	,,	21st	,,	...	... 43	43
Staff and details		...		...	... 31	100
Lascars ...	...	...	...	...	... 456	457

The strength of European officers attached to regiments in the division was :—

Table II.

H. M.'s 4th Rifles	1
„ 7th N. I.	2
„ 20th „	6
„ 21st „	5
„ 26th „	5

19 against 21 of the previous year.

At the close of the year 1873 there remained on the sick returns of the Presidency Division 86, and at the termination of the year 1874 there were 70, exclusive of lascars, of which body of men there were 13.

The admissions into hospital in the year 1874 were 2,959, the number in the previous year being 3,080, and in 1872, 3,753. In 1871 the number was somewhat lower than in the year under report.

The recorded deaths in hospital in 1874 were 26, against 21, 25 and 26 of the previous three years. The deaths out of hospital amounted to 10, against 21, 11, 29 of the previous periods.

The admissions of European officers on the sick report are shown to have been 14; in the preceding three years they were 12, 26, and 11; of these two were twice admitted. One officer was sent on medical certificate to Europe, two officers died.

The following corps, &c., gave the admissions into hospital :—

Table III.

H. M.'s 4th Rifles	120
„ 7th N. I.	293
„ 20th N. I.	637
„ „ Detachment	19
„ 21st N. I.	373
„ „ Detachments	219
„ 26th N. I.	1,267
Staff and details	31
Total ...	2,959

The admissions from the detachments of H. M.'s 21st Regiment are shown above; it will, however, be satisfactory to give them in detail, as the strength is only 87 :—

	Strength.	Admissions.
At Bushire	16	47
„ Bassadore	12	135
Steamer "Constance" ...	7	15
„ "Dalhousie" ...	8	22
	43	219

At Bushire the number trebled the strength, and at Bassadore they were eleven times the strength, in consequence of frequent re-admissions. Last year I suggested that these latter detachments should be relieved more than once in a year, as the men returned quite broken from repeated attacks of ague and scurvy.

In the following table is shown the proportion of admissions per cent. to strength. The strength of the detachments of the 21st Regiment being small, and, consequently, re-admissions many, make the percentage frequently high; this, however, is most particularly observable at Bushire and Bassadore. Concerning these under Table III. reference has been made.

Table IV.

H. M.'s 4th Rifles	80·53
„ 7th N. I.	91·8
„ 20th N. I.	101·28
„ „ Detachment	111·76
„ 21st N. I.	66·13
„ „ Detachment, Bushire	293·75
„ „ „ Bassadore	1,125·70
„ „ „ Steamer "Constance"	214·28
„ „ „ „ "Dalhousie"	275·
„ 26th N. I.	195·22
Staff and Details	100·

The average daily sick of each medical charge was as follows :—

Table V.

H. M.'s 4th Rifles	5·30
„ 7th N. I.	7·70
„ 20th N. I.	30·50
„ „ Detachments...	·38
„ 21st N. I.	21·
„ „ Detachments...	3·03
„ 26th N. I.	31·30
Staff and Details	5·

In the preceding three years the average daily sick in the division was 104·4, 115·76, and 93·99, but in the latter (1871) the average daily sick of the detachments was not shown.

The following table gives the percentage of daily sick to strength :—

Table VI.

	1872.	1873.	1874.
H. M.'s 4th Rifles ...	...	...	3·35
„ 7th N. I. ...	3·6	6·54	2·74
„ 20th N. I. ...	...	5·03	4·70
„ „ Detachment	..	8·20	·22
„ 21st N. I. ...	3·4	3·4	3·72
„ „ Bushire	...	10·31	8·68
„ „ Bassadore	16·70	16·83	12·88
„ „ "Constance"	...	..	21·48
„ „ "Dalhousie"	..	...	3·0
„ 26th Regiment N. I.	6·34	4·18	4·80
Staff and Details ...	6·60	6·97	16·12

In 1873 the 4th Rifles detachment had no sick for the month they were quartered in Bombay. The 20th Regiment N. I. was not in Bombay in 1872.

There were discharged from hospitals to duty 2,816; 133 were otherwise discharged, and 26 died in hospitals. Of the 133 discharged "otherwise," 65 were granted sick leave, against 49 in the previous year. This number gives a percentage to strength on sick leave of 2·70 against 2·01 of the previous year.

TABLE VII.

	Diseases.	Sick Leave.										From what Regiment.											
		Number.	Average Duration of Diseases in Hospital.		Greatest Number of Days in Hospital.	Least Number of Days in Hospital.	Least Amount of Leave granted for each Disease.		Greatest Amount of Leave granted for each Disease.		Deaths on Sick Leave.	Detachment 4th Rifles N. I.	Right Wing 7th Regt. N. I.	H. M.'s 20th Regt. N. I.	Detachment 20th Regt. N. I. at Jinjira.	H. M.'s 21st Regt. N. I.	Detachment 21st Regt. N. I. at Bushire.	Detachment 21st Regt. N. I at Bassadore.	Detachment 21st Regt. N. I. on H.M.'s Str. "Constance."	Detachment 21st Regt. N. I. on H. M.'s Str. "Dalhousie."	H. M.'s 26th Regt. N. I.	Staff and Details.	Total.
			Months.	Days.			Months.	Days.	Months.	Days.													
1	Ague	19	1	5	78	6	3	15	9	...	1	...	3	2	...	10	...	...	..	...	4	...	19
2	Rheumatism, acute	1	1	...	30	30	4	15	4	15	...	...	...	...	...	1	...	...	...	...	...	...	1
3	Rheumatism, chronic	12	2	1	150	30	3	...	9	...	...	...	1	...	...	11	...	...	...	...	...	...	12
4	Rheumatism, gonorrhœal	2	3	14	146	60	6	...	12	...	...	...	...	1	...	1	...	...	...	...	...	...	2
5	Syphilis, primary	2	2	20	71	70	3	...	4	...	...	...	...	...	...	1	...	...	...	...	1	...	2
6	Syphilis, secondary	4	1	18	82	12	3	...	4	...	...	...	...	...	...	1	...	...	...	...	3	...	4
7	Scurvy	7	3	7	59	30	4	...	6	...	1	...	1	1	...	3	...	2	...	...	...	...	7
8	Vertigo	1	1	14	44	44	6	...	6	...	...	...	...	...	...	...	...	...	...	...	1	...	1
9	Conjunctivitis	1	1	12	42	42	3	...	3	...	..	...	...	...	...	...	...	...	...	...	1	...	1
10	Bronchitis	1	1	19	45	45	9	...	9	...	...	...	...	...	..	...	...	...	...	...	1	...	1
11	Pneumonic phthisis	1	...	5	5	5	1	...	1	...	...	...	...	...	...	...	...	...	1	...	...	...	1
12	Dysentery	2	2	15	75	75	4	...	6	...	..	...	...	...	...	2	...	...	...	...	...	...	2
13	Hepatitis	1	2	15	75	75	4	...	4	...	...	...	...	...	...	1	...	...	...	...	...	...	1
14	Splenitis	2	...	22	45	30	3	...	15	8	...	...	...	...	...	1	...	...	...	...	1	...	2
15	Guinea-worm	1	3	13	103	103	6	6	6	...	...	...	...	1	...	...	...	...	...	...	...	...	1
16	Tumour	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	Ulcer	1	1	24	54	54	4	15	4	15	...	...	...	...	...	1	...	...	...	...	...	...	1
18	Scabies	1	1	8	38	38	4	15	4	15	...	...	...	...	...	1	...	...	...	...	...	...	1
19	Boils	2	1	22	45	60	3	...	4	...	...	...	...	...	...	1	...	...	...	...	1	...	2
20	Debility	4	1	4	45	30	2	...	6	...	...	...	...	1	...	3	...	...	...	...	...	...	4
	Total ...	65	...	...	...	...	...	...	...	...	...	...	5	6	...	38	...	2	1	...	13	...	65

In 1874 the chief diseases for which sick leave was granted were ague, rheumatism, scurvy: the greatest amount of leave granted was for 12 and 9 months to Hindustan for rheumatism and bronchitis. In a previous report I pointed out that these long leaves, formerly granted in consequence of the laborious and tedious journeys required, are not so much necessitated now, when a man can proceed to his country almost as quickly as he can to the Southern Konkan.

It would almost seem advisable for Medical Officers to be allowed, when finding disease obstinate, instead of always sending the sick man to his country, to send him to another hospital for treatment as well as change. As happens now, a man is sent away for nine months or a year or for shorter periods; he returns no better, only perhaps to be brought before the next invaliding committee. Sick leave is, of course, often beneficial; but the cases should, I think, be selected where change of air only appears to be required.

The total treated in the division was:—

Table VIII.

H. M.'s 4th Rifles, Detachment	120	Detachment, Bushire ...	47
„ 7th N. I., Wing ...	318	„ Bassadore	138
„ 20th N. I.	650	"Constance" ...	16
„ „ Detachment ...	19	"Dalhousie" ...	22
„ 21st Regiment N. I. ...	394	Staff and details ...	34
„ 26th Regiment N. I. ...	1,287		
		Total...	3,045

against 3,178 and 3,910 of the two previous years; this is accounted for by the lessened amount of sickness at Tanna, guinea-worm having ceased to appear, and by a small decrease in the number treated in the 20th and 21st Regiments. In the 26th Regiment the number had somewhat increased, the cases being chiefly of ague.

The ratio of treated to strength in the three regiments and wing quartered at Bombay, Surat, and Tanna, was:—

Table IX.

	1874.	1873.	1872.	1871.
H. M.'s 7th Regiment N. I. Wing ...	99·68	165·09	...	...
„ 20th „ Regt. ...	103·72	110·84	...	...
„ 21st „ „ ...	101·64	80·44	89·16	80·66
„ 26th „ „ ...	198·30	189·73	259·5	...

This table compares favourably for 1874 with the results of previous years, except in the 21st and 26th Regiments.

Of intermittent fever the admissions into hospitals were as follows:—

Table X.

		1874.	1873.	
Bombay	H. M.'s 4th Rifles, Detachment... ...	39	...	
Tanna	„ 7th Regiment N. I., Wing ...	204	270	
Bombay	„ 20th „ ...	148	210	
Jinjira	„ „ „ Detachment...	12	5	
Bombay	„ 21st Regiment N. I. ...	101	172	
Bushire	„ „ „ Detacht. ...	39	38	
Bassadore	„ „ „ „ ...	86	102	
Persian Gulf	„ „ „ „ ...	4	None	"Constance."
Transport duty	„ „ „ „ ...	8	„	"Dalhousie."
Surat	„ 26th Regiment N. I. ...	806	750	
Bombay	„ Staff and Details ...	11	7	

The next table shows the admissions of intermittent fever to strength and to treated :—

Table XI.

	1874.		1873.	
	To Strength.	To Treated.	To Strength.	To Treated.
H.M.'s 4th Rifles, Detachment...	26·17	33·	...	...
,, 7th N. I., Wing ...	72·8	64·1	98·18	60·26
,, 20th N. I.	23·56	22·76	33·98	30·46
,, ,, Detachment...	70·69	63·15	29·41	71·42
,, 21st Regiment N. I. ...	17·90	25·63	28·08	36·36
,, ,, Bushire...	243·75	82·97	237·5	44·7
,, ,, Bassadore	710·15	62·32	850·	72·35
,, ,, "Constance"	57·7	25·	...	...
,, ,, "Dalhousie"	100·	36·36	...	...
,, 26th N. I.	124·19	62·62	114·85	60·5
Staff and details	35·48	32·35	22·58	15·55

Intermittent fever continues generally to bear a large proportion to other diseases admitted to hospitals; but in all the large charges, except in the 26th Regiment, there has been a decided improvement on the preceding year.

The mortality during the year in hospital was 26, against 21 of the year 1873 and 25 of 1872. There appear to have been 10 deaths out of hospital, some of which occurred while on sick leave. The death-rate per cent. to total treated was 0·83 and to strength 1·08 : if deaths out of hospital are added, the mortality rate of the division would stand as 1·23 to treated and 1·57 to strength.

The deaths occurred in the hospitals of the following charges :—

Table XII.

4th Rifles, Detachment...	1
7th N. I. Wing...	2
20th ,, ...	7
21st ,, ...	7
26th ,, ...	6
Detachments, 21st N. I.	1
Staff and details.	2

Out of hospital the returns show the following deaths to have taken place :—in the 7th N. I. 1 from malarial fever and 1 from scurvy; in the 21st Regiment N. I. 4 deaths from diseases under Sub-division B. In the 26th Regiment N. I. there were 2 deaths from malarial fever, 1 from disease of stomach and bowels, and 1 from unknown causes.

General Observations.

Detachment, 4th Rifles.

The general health of this detachment has been good during the year under report; the men have been quartered in pendalls on the Esplanade, the accommodation and ventilation in which were sufficient and good, the drainage natural, bathing performed round a tank in the vicinity, the water of which is not used for drinking purposes. Latrine arrangements are satisfactory. The number of admissions was 120, but many of these were re-admissions. There was no cholera and no small-pox. The hospital in which the sick of this detachment are treated is in good order, well regulated, and plentifully supplied.

Wing, 7th Regiment N.I.

The wing of this regiment, which has been quartered at Tanna during the year, has enjoyed very fair health : there was less fever, and dracunculus had disappeared. The quarters of the wing are divisible into new and old. In appearance the newly-erected houses are superior to the old. The drainage is surface, and house drainage insufficient.

Some of the wells are too close to parts of the lines, and this, it is feared, allows of their being polluted by soakage: the results of analysis of these well-waters would go far to prove this. The line latrines are placed badly; if properly managed, they might be less of a nuisance than they are found to be. Recommendations with reference to them were made by me at my annual inspection.

There was no cholera and no small-pox. Vaccination and revaccination were carried on. The water-supply at Tanna is of an extremely inferior character, the probable causes of which are shown in the report of the Medical Officer in charge.

The hospital of the wing was in good order; the accommodation, allowing so small a superficial space as 60 feet, is for 17 sick. Verandah space is taken when required.

The hospital is well regulated and plentifully supplied.

20th Regiment N. I.

The general health of the men of this regiment has been good. The quarters of the regiment are in the lines at Boree Bunder, concerning which much has been previously reported; the house drainage requires much attention, as in the rains the huts are almost uninhabitable. The school accommodation was too limited. The men bathe outside wells, the water of which is not used for drinking purposes. The latrines of the lines are excellent. There was no cholera nor small-pox amongst the men, but two cases of the latter occurred in a woman and child. Vaccination and revaccination were duly attended to. The water-supply was good and plentiful. The hospital is well situated, and has not been over-crowded. The hospital latrines were reported on two years since as requiring much repair: pending references on the subject of the hospitals sanction for the repairs was withheld. A bathing-room was also recommended, but this also was not allowed to be carried out. The hospital is well regulated in other matters, and plentifully supplied.

The detachment of this regiment at Muria, Jinjira, was relieved twice; generally the health of the men here was good. In November most of them suffered from very slight attacks of fever.

21st Regiment N. I.

The general health of this regiment was good during the year. The lines are well situated and ventilated; the drainage of houses and streets well secured. The men bathe outside wells generally, the water of which is not used for drinking purposes. The hut drainage is good. Latrine arrangements are distant, at Sonapur. The water-supply is from Vehar. There was no cholera nor small-pox amongst the men, but there were five cases of the latter in children. Vaccination and revaccination were carried on carefully.

It appears that Mussulmans, enlisted into this regiment from Hindustan, come to Bombay full of health and strength, but gradually fall away from the effect of change of climate. In the process of acclimatization they suffer from ague and rheumatism, and many are obliged to be sent away on sick leave. When acclimatized these men become good, well set up soldiers; but the Surgeon of the regiment, Surgeon-Major Mills, is of opinion that it is doubtful whether the introduction of this class of recruits is likely to be advantageous.

I wish to note here that the detachments at Bushire and Bassadore suffer annually from fever to such an extent as to be of serious importance, and it would be advisable, if it could be so arranged, for a more frequent relief being carried out. The Medical Officer at Bassadore recommends the ration being altered from that now given, namely, rice 2 lbs., dhall 4 ozs., ghee 2 ozs., &c., to the diet previously in use, of which mutton was a component.

26th Regiment N. I.

The general health of the men of this regiment has not been reported so favourably on during the year 1874: this is demonstrated by the increased number of sick. In appearance the men are stated to be somewhat below par. Except for a few days in January the regiment has been in quarters in Surat during the year. The lines were in good order, and open to the prevailing winds. The house drainage is deficient. The latrine arrangements are very good. The admissions amounted to 1,267; 806 of these were for ague: this disease, however, occurred in 373 men only, the rest being made up of re-admissions from twice to ten times. There was no cholera or small-pox amongst the men; of the latter disease one woman was attacked. Vaccination and revaccination were duly attended to. The water-supply is not plentiful, the sources of "sweet" potable water being few; the generality of the wells contain brackish water. The hospital was in good order and repair, and fairly regulated; the medicines and instruments fully supplied. This regiment has been for several years quartered in the Northern Division of the Army.

The staff and details occupy excellent quarters on the Esplanade; they are chiefly composed of men passing to and from their regiments on leave, of men sent down to the annual invaliding committee, and of parties *en route*. The sick of these are treated in the hospital of the 21st Regiment N. I.

Lascars of the Ordnance, &c.

The general health of these men may be said to have been fair. A part of them, 95 store and 10 tent lascars, occupies the Lascar Lines at Lower Colaba; the remainder, 346, have their lodgings in the purlieus of Dhobee Talao, Camatipura, and neighbouring localities, where it is said they have to pay largely for house-rent and are liable to more sickness than those occupying the lines. Surgeon-Major Mills, in medical charge, reported a case to the Health Officer where eight or nine persons were located in a small room in the Dhobee Talao District, all but two of whom had chicken-pox. The lines were found quite clean, drainage indifferent, owing to proper fall being required; but this with the aid of the Municipality, whose drains join, might be easily corrected. The proximity of municipal latrines and sweepers' lines is as previously reported. There was no cholera or small-pox. The water-supply is from Vehar, good and plentiful.

The sick are received into the hospital of the 21st Regiment N. I.

Lock-hospital, Deoláli.

This hospital was visited by me on the 22nd January 1875. Since the last year's inspection no changes for the better have taken place; indeed, it has been found necessary by the cantonment authorities to keep the hut standing by supports, freely applied inside and outside. In the forwarding remarks accompanying the annual statement to the Quarter-Master General, the present condition of the hospital was briefly stated, and I gave my opinion, "that a new shed should be erected without delay, as I do not think the present one can last another season." There were no sick in the hospital at my visit, but a larger number has been on the register than usual during the year. It appears from the returns that, during the year, 29 women were borne on the register; that the greatest number at one time was 13, the least 1; some women were fined who were ascertained to practise without a license, and others were brought before the magistrate similarly charged, but were discharged. More or less all lock-hospitals must have a beneficial effect, and to a certain extent that at Deoláli has been of real service during the year.

ADEN.

The native troops at Aden and Perim during the year 1874 were:—

H. M.'s 5th Company, Sappers and Miners.
„ 2nd Company, Native Artillery.
„ Aden Troop of Horse.
„ 2nd Grenadier Regiment N. I.
„ „ Detachment, Perim.
Conductors, serjeants, and lascars of the Ordnance and other departments.

The Sappers and Miners were in quarters at Aden during the year. The 2nd Company, Native Artillery, arrived from Rájkot on the 2nd February 1874; all the other troops have been resident during the year—the Native Infantry giving off, every second month, the relief detachment for the occupation of Perim.

The average strength of fighting men, as it stood on the 31st December 1874, is shown in the following table:—

Table I.

	Average.	31st Dec. 1874.
H. M.'s 5th Company, Sappers and Miners.	94	94
„ 2nd Company, Native Artillery	75	75
„ Aden Troop	87	86
„ 2nd Grenadier N. I.	636	636
„ „ Detachment, Perim	51	50
	943	941

The general strength of followers is computed at 529; 68 of these or thereabouts being lascars of the Ordnance Department.

Of European commissioned officers attached to the force the strength was;—

Table II.

H. M.'s 5th Company, Sappers and Miners	1
„ 2nd Company, Native Artillery	1
„ Aden Troop	1
„ 2nd Grenadier N. I.	7
„ „ Detachment	1
Departments	4

At the end of the year 1873 there were 98 remaining in hospital; the admissions in 1874 were 902, in 1873 they were 1,126, in 1872 1,085, and in 1871 1,412. The mortality in hospital amounted to 6 : in 1873 there were 11 deaths, in 1872, 8, and in 1871, 20 deaths. At the end of the year under report there were remaining in hospital theextremely small number of 15, being 91 less than in 1873.

There were 12 admissions amongst European officers; of these one was twice on the sick list and two thrice each. One officer was sent on medical certificate to Europe for ague. No deaths occurred.

The total number of admissions (902) was made up from the various charges, as follows :—

Table III.

H. M.'s 5th Company, Sappers and Miners	77
„ 2nd Company, Native Artillery	59
„ Aden Troop	307
„ 2nd Grenadier Regiment	440
„ „ Detachment, Perim ...	19
	902

The proportion of admissions per cent. to strength of each charge was—

Table IV.

H. M.'s 5th Company, Sappers and Miners	81·91
„ 2nd Company, Native Artillery	78·80
„ Aden Troop	352·87
„ 2nd Grenadier N. I.	69·18
„ „ Detachment, Perim ...	37·25

The average daily sick of each corps was—

Table V.

H. M.'s 5th Company, Sappers and Miners...	2·4
„ 2nd Company, Native Artillery	1·4
„ Aden Troop	6·9
„ 2nd Grenadier N. I.	18·2
„ „ Detachment	·19
	29·09

For the three previous years it stood at 38·57, 35·43, and 50·5.

The percentage of daily sick to strength of the above corps and detachments is shown in the following :—

Table VI.

H. M.'s 5th Company, Sappers and Miners	2·55
„ 2nd Company, Native Artillery	1·91
„ Aden Troop...	7·93
„ 2nd Grenadier N. I.	2·86
„ „ Detachment, Perim... ...	·37

There were discharged from hospitals to duty during the year 956, otherwise discharged 23, and of these 13 were sent on sick leave to India. There were 70 men invalided, or 7·33 per cent. to strength, and 59 of these were from the Grenadiers, or 9·27 per cent. to strength of that regiment. The following table shows the causes for which medical certificates to sepoys were granted from Aden; it will be observed from the table that out of 13 so granted leave, 5 were for scurvy, and 2 from debility, doubtless due to scorbutic taint :—

TABLE VII.

Diseases.	Sick Leave.										From what Regiment.					
	Number.	Average Duration of Disease in Hospital.		Greatest Number of Days in Hospital.	Least Number of Days in Hospital.	Deaths on Sick Leave.	Least Amount of Leave granted.		Greatest Amount of Leave granted.		H. M.'s 2nd Company, Native Artillery.	H. M.'s 5th Company, Sappers and Miners.	Aden Troop.	H. M.'s 2nd Grenadier Regt. N. I.	Detachment, 2nd Grenadier Regt. N. I., Perim.	Total.
		Months.	Days.				Months.	Days.	Months.	Days.						
Ague	2	...	16	25	8	...	6	...	6	...	...	1	...	1	...	2
Pyœmia	1	...	88	88	...	...	9	...	9	...	...	...	...	1	...	1
Scurvy	5	...	19	27	14	...	6	...	6	...	...	1	...	4	...	5
Bronchitis	1	...	58	58	...	...	3	...	3	...	1	...	...	...	...	1
Splenitis	1	...	8	8	...	...	8	...	8	...	...	...	1	...	...	1
Debility	2	...	74	90	58	1	9	...	...	...	...	...	...	2	...	2
Abscess in rectum ...	1	...	33	33	...	...	9	...	9	...	...	...	...	1	...	1

The total treated at Aden and Perim was 1,000, against 1,149 of the previous year. The charges contributed as follows :—

Table VIII.

H. M.'s 5th Company, Sappers and Miners	101
„ 2nd Company, Native Artillery	59
„ Aden Troop	319
„ 2nd Grenadier N. I.	502
„ „ Detachment, Perim	19
	1,000

and in these the percentage of treated to strength was—

Table IX.

H. M.'s 5th Company, Sappers and Miners	107·44
„ 2nd Company, Native Artillery	77·80
„ Aden Troop	366·66
„ 2nd Grenadier N. I.	78·93
„ „ Detachment, Perim ...	37·25

Intermittent fever gave the following admissions in the year :—

Table X.

Camp.—H. M.'s 5th Company, Sappers and Miners	41
Steamer Point.—H. M.'s 2nd Company, Native Artillery ...	13
Kora Muxar.—H. M.'s Aden Troop	126
Camp and Isthmus.—H. M.'s 2nd Grenadier N. I.	151
Perim.— Do. Detachment do.	4
	339

against 420 of the previous year; in 1872 there were 287. The percentage of admissions from intermittent fever to treated and to strength at Aden was as follows :—

Table XI.

	To Treated.	To Strength.
H. M.'s 5th Company, Sappers and Miners ...	... 40·59	... 43·61
„ 2nd Company, Native Artillery ...	... 22·03	... 17·14
„ Aden Troop	... 39·49	... 144·83
„ 2nd Grenadier N. I.	... 30·87	... 24·37
„ „ Detachment, Perim	... 21·05	... 7·84

The fever contracted at Lahej and Zaida in the latter part of the year 1873 continued to return for some time after the men came back to Aden. The Aden Troop had somewhat less of this disease than in the previous year; the number, however, is still very considerable for so small a number of men, and comprises many re-admissions. The mortality in hospitals was six; out of hospital three deaths were reported. The death-rate to strength was 0·63; if those out of hospital are added, it would be 0·95, against 1·10 and 1·90 of the previous year. The deaths (6) all occurred in the 2nd Grenadier Regiment.

The average strength of the men whose sick were treated in the Native Military Hospital, Aden, in the year was 529. This charge includes the lascars of the Ordnance Department, Commissariat, Barrack, and bazaar, together with commissioned and non-commissioned officers, conductors with their families, who all receive medical treatment from the hospital. On the 31st December 1873 there were 19 remaining, and in December 1874 there were 6; there was one death amongst the lascars.

The hospital is by no means a suitable building, and suggestions have been made concerning its removal to the old artillery hospital, close by, which is now used as a store and residence. The subject is under consideration.

Excellent new lines have been built at the Isthmus for the ordnance lascars, but a few improvements were necessary, such as a verandah to married men's quarters as well as to those of the unmarried men, as the space inside was somewhat confined. Cooking places and "morees" for family purposes are also required. The old temporary roof of the regimental hospital was being replaced by a tiled roof when I visted Aden. No other alterations had been made since my previous inspection.

I was unable to visit the out-post at Perim in the year; there was no steamer available—that is to say, the relief did not take place during my stay in December. The general health character of the peninsula appears to have been good during the year. At the commencement, intermittent fever, which had originated on field service in the interior, continued to afford many cases for treatment, but it gradually declined, and at the end of the year in the total military fighting population there were only 15 in hospitals, being 1·59 to strength, and of these 5 were cases of intermittent fever, or 33·33 per cent. to total. The Medical Officer in charge of the native regiment writes unfavourably of the climate. For native soldier a prolonged residence at Aden, as it would, perhaps, in some other foreign and distant places, appears to have an injurious effect. Scurvy is much complained of, and there is no doubt that to this disease the native soldier is peculiarly prone. It is difficult to assign any one cause for this cachexia; every means have been used to render the sepoy less liable to it, undoubtedly with some benefit. I notice that in the diseases of the sepoys of H. M.'s 5th Regiment N. I. in the year 1873, a year after return from Aden, there were 43 cases of scurvy treated, and that this regiment stands next to the 2nd Grenadiers in the number treated of this diseases throughout the Presidency. The lines of the various corps were in good order when visited by me. The latrines of the regiment were perfectly free from smell, but the Medical Officer in charge states that they are frequently offensive.

The latrine of the Sappers and Miners was to be removed, and a new one built on another site.

There was no cholera or small-pox. The water-supply was good, and fairly sufficient.

Vaccination and revaccination were duly attended to.

The hospitals were in good order, and supplied with medicines, &c., according to requirements. There is no hospital for the sick of the Aden Troop; the erection of a small one is most advisable, and I believe the subject is under consideration.

The lock-hospital at Aden has not had any alterations made in it since last report; its unprotected condition is much against it. The position of the place is good, but the structure is of such extremely slight material as to render it doubly hazardous. Patients may leave it at any time if the single policeman on duty succumbs to the influence of sleep. The report of the Medical Officer speaks very favourably for the utility of the hospital. As there is one unguarded point where women are said to practise prostitution, and where many of the men are located—these women are unregistered and without supervision—the place is Steamer Point, and it would be conducive to the interest of the soldier if steps were arranged for the registration and examination of the public women living in its neighbourhood.

POONA DIVISION.

Average strength present during the year .....8,050.
Average daily sick per cent. to the average strength ..... 2·89.
Ratio of mortality per cent. to the average strength ..... 0·44.

1st Light Cavalry.

Poona.—In medical charge of Surgeon McAlister; Strength, 420.

Location and Movements of Corps.

The 1st Lancers have occupied these lines throughout the year, and since December 1871.

Detachments.

In the month of February, in consequence of disturbances in Bombay, the 2nd Squadron of the 1st Lancers proceeded there by train, and were employed there till the 31st May, when they returned by way of Tanna and Khandála. This was the only occasion on which the men were required for active service during the year.

Topography.

I have already fully described the general constitution and physical aspect of the cavalry lines in my former reports; it will, therefore, be unnecessary to enter into minute details in the present one; it will be sufficient to state that the site has been well selected, and in every respect possessing the best natural conditions for the location of a permanent camp. The ground on which the lines are constructed is an exceptional elevation on the north side of the G. I. P. Railway, and slopes gently from the south to the river Mula-Mutha, which runs due east, and forms the northern boundary of the cavalry reservation. The underlying rock of the vicinity is laterite, which crops out at short and irregular intervals all over this portion of the country. All the wells are dug out of this rock. The country to the east and west of the camp is under cultivation.

The soil is natural, scanty, and black in colour, consisting chiefly of decomposed laterite, is easily penetrated by water, and absorbs and radiates heat very rapidly. Water is found in the wells at the depth of 15 to 20 feet at all seasons. The wells are filled by exudation from seams in the laterite. The site is well drained naturally by a fall in nearly every direction, but more especially towards the river on the north side. The surface drainage has been maintained in a satisfactory state throughout the wet season.

Effects on Climate.

The climate of Poona during the cold and warm seasons is, generally speaking, very dry. In the months of November, December, and January sudden changes of temperature are common (a difference of 35 to 40 degrees in 24 hours is not unusual), but do not appear to affect the health as in climates where the atmosphere is more humid. The air is for the greater part of the year pure and bracing, but the months of June and July are moist, muggy, and relaxing. The past year's rainy season was remarkable for the violence of the separate storms, and also for the small number of decidedly wet days, most of which occurred in July, August, and September. The lowest temperature during these months, according to the latest returns, was 68 degrees Fahrenheit, and the mean daily average was 75 degrees. The rainy season terminates early in October, but no degree of cold is experienced before the 1st of November. The rain-fall has been unusually heavy during the past season, viz., 34 inches 78 cents, as compared with that of the two previous years, 26 and 19 inches respectively. The heat of the hot-weather months reflected from the rocky soil, for the most part bare of shade trees, would be almost unbearable if it were not tempered by constant breezes from the west and south-west, and sultry nights are almost unknown even during the hottest weather. The mean temperature of the warm season is 81 degrees and the maximum 95 degrees.

Lines.

With the exception of some slight improvements the lines are still very much in the same condition in which they were at the time when my previous report was written, and have not been added to or altered. They run east and west, and are divided into wings by a broad thoroughfare. Each wing contains four blocks, the flank consisting of a single row, and the intervening of a double row of huts. The following table will show the general constitution of the lines, and also see plan attached.

Number of lines 12
Number of huts in each line 30
Cubic feet of air space in each hut 1,200
Length, breadth, and height 12 × 10 × 11 feet 6 inches at highest point.
Breadth of space between lines in front .....62 feet.
Do. do. behind ..... 9 feet.

Six lines are allotted to bachelors and six to married men.

Average ascertainable number of persons living in a bachelor's hut ..... 2.
Average ascertainable number of persons living in a married man's hut... 4.

Some of the married men's huts contain as many as nine individuals.

From this it will be seen that in most of the huts the amount of cubic space is insufficient. The only openings are a door in front, and one also in the rear, measuring 6 × 3 feet.

The door in rear leads into a small mud enclosure, 12 × 4 feet, used by the members of the families for all the ordinary purposes of nature. This enclosure obstructs ventilation, and affords concealment for many filthy practices. The hut itself when the doors are closed, (as they all are at night) has no ventilation except what little takes place through cracks and crevices in the tiles. When the huts are empty a large portion of the day, cubic space becomes important in itself as affording a stock of fresh air to commence with; but in the huts of our lines, particularly those of the married men, being, as they are, constantly occupied, its value, though great, is secondary to regular and constant ventilation. It is to be regretted that the lines were not erected with a view to proper air space and ventilation. The only means of ventilation at present are the door in front of the huts and that situated behind, and when these doors are closed, as they necessarily must be, in inclement weather, with the exception of what air is forced by the wind through the walls of the hut, there are no other openings by which it can enter to supply the upward current with sufficient rapidity to secure thereby an adequate change of air within the hut, and thus crowded-poisoning must be the inevitable result.

Although the sick report for the past year does not show the result of these unhealthy conditions in an unusual number of men actually unfit for duty, yet an injurious effect is perceptible in diminishing the general standard of health. I think, too, that the numerous cases of dysentery and diarrhœa which occurred in the regiment during the rainy season of 1873, were directly attributable to these unhealthy conditions. The drainage of the lines is naturally good, the whole of the ground having a gradual slope to the river. The surrounding neighbourhood is entirely free from jungle, and is for the most part cultivated, and is likewise well "drained" by nallahs following the natural slope, and finally emptying themselves into the river (*vide* plan).

I beg again to bring before the notice of the medical authorities the wretched condition of the huts, or rather "hovels," occupied by the regimental followers, to which I have so forcibly called attention in previous reports. I regret to say that little has been done during the past year to improve the sanitary state of these huts. It is the opinion of all who have given the subject consideration that the erection of new "syce lines" is essentially necessary, not only in the interest of the poorly paid followers and their families, but in the interest of the sowars and officers, who, in my opinion, ought to be protected from the liability of exposure to the many contagious diseases which filthy locations of the kind are capable of developing and propagating. An outbreak of cholera occurred amongst the followers in the wet season of 1872; and the cognate diseases, diarrhœa and dysentery, are always remarkably prevalent amongst them.

Conservancy and Sanitary Arrangements

Are measures of the highest importance in promoting the public health of the lines, and I have much pleasure in bearing testimony to the thorough manner in which the sanitary administration of the camp has been maintained throughout the year. The lines were much better cleaned in 1874 than in the three previous years, and, I am happy to say, with a marked decrease in the "sick list." There are three blocks of latrines for the regiment, situated to the east of the regimental bazaar, and this site is perhaps the best that could have been selected. Each block contains twelve seats, separated by partitions, and are furnished with iron buckets; the dry-earth system is followed. The earth is placed at hand, ready for use, in baskets; the excreta, &c., is removed by the conservancy carts to the "cantonment manure-yard," about half a mile to the east of the cavalry parade ground, there emptied into trenches, and covered with earth. This after a few months forms excellent manure, and is sold by the cantonment authorities to the ryots in the neighbouring villages. The trench system of conservancy could not be practised within the limits of our reservation, as the soil is too scanty, and the space limited.

Water-supply.

Until a few months ago the drinking water for the use of the regiment was supplied almost entirely by two wells on the west side of the reservation and close to the "mess-house" as indicated in the plan. Even at the present time most of the water daily used is obtained from this source, and is drawn and delivered to sowars by the regimental bheesties. The service of the water-pipes connecting the lines with the "Kharakwásla" water-works has up to the present time been interrupted from some cause or other not apparent to me.

Notwithstanding the partial filtration which this water is subjected to before it leaves the "reservoir" for distribution, yet the solid matter, in a specimen examined by me in July last, contained as much as 20 grains of sediment per gallon, and a very perceptible amount of "organic matter," so much so that I should feel disposed to believe that the "Kharakwásla" water, more particularly in the early part of the rainy season, would most likely act prejudicially to the public health. The supply of water from the wells is good and ample, and rarely shows traces of organic matter. By the completion of the "Kharakwásla" Canal the authorities have secured for the city and cantonment of Poona an ample supply of water. It still remains to be seen how they propose protecting this supply from the various sources of contamination which exist along the banks of the canal, to some of which I directed attention in my last annual report, and would urge again that they receive immediate consideration.

Food—Quality of, and whether abundant and cheap.

The supply of food in the regimental and Poona bazaars is abundant and cheap. Fish are caught in the neighbouring river in considerable numbers and of several varieties. Very seldom are the men enabled to improve their diet by the killing of game on account of the scarcity of large game within easy reach of Poona.

Clothing.

As I have never changed my original views on the clothing and equipment of the men I can only repeat what I have before expressed in my report for 1870.

Remarks on the Dress and Equipment of 1st Bombay Light Cavalry.

		Stone.	Lbs.
Heaviest man in the regiment		12	12
Lightest ditto		7	4
Average weight standing		9	$6\frac{3}{4}$
Average weight on ordinary mounted duty... ...	With old saddle	13	$5\frac{3}{4}$
	With new saddle	12	$12\frac{3}{5}$
In complete marching order	Old saddle ...	15	$13\frac{3}{5}$
	New saddle ...	14	$12\frac{3}{5}$

The sowars and non-commissioned officers of the 1st Cavalry have two descriptions of uniform: the fatigue dress worn in camp on ordinary duties, and the marching order, or full dress, which would be worn on service. The fatigue dress, or ordinary dress for regimental duties in camp, is usually made of American drill, or other light material of cotton obtainable in the bazaars. It is dyed in the bazaar a dark blue, and consists of a short jacket nearly tight-fitting, and trousers of the same colour and material. Shoes with clasps and small twisted puggree of thin red cotton material (muddra) complete this dress.

Remarks on the Fatigue Dress.—Jacket and Trousers.

1. The dye used in colouring these is from indigo, and is not a fixed dye, the slightest moisture causing it to give. All under-clothing worn with it becomes stained a bright blue, and the "odour" from it, when new or moist with perspiration or rain, is most unpleasant.

As regards the texture, this dress is only suitable to the hot weather; in the rains and cold season a warmer material would be better, and would probably save many from fever rheumatism, and diarrhœa.

Puggree and Shoes.

Suitable for ordinary camp duties.

Marching order, or service dress, consists of:—

1. Puggree—the same as in the fatigue dress.
2. Alkalick, or coat, of thick French grey cloth.
3. Trousers and breeches, of thick dark-blue cloth.
4. Cumberbund or waist cloth—three yards of the same thin red cotton material as in the puggree.
5. Long boots covering the knee.
6. Large cloak with cape, cavalry pattern, of dark-blue cloth.

Remarks on the Full Dress.

1. Puggree is not at all suited as a protection from either sun, rain, cold, or from sword cuts. Men of the regiment have frequently complained, when out in the districts, that the sun affects their heads; and it is well known that all when out of camp, and not under the eye of an officer, invariably cover their heads with any cloth that they can get hold of, both as a means of protection from heat and cold.

The large folds of a Sheik turban, usually worn by the men of the Bengal Irregular Cavalry, are sword-proof, and afford complete protection from heat and cold, besides giving a soldierlike and becoming appearance to the native cavalry soldier, who of all others requires good protection for his head, as he is necessarily more liable to injury in that portion of his person than the foot soldiers.

2. Alkalick is made of thick coarse cloth, tight-fitting, with long skirts, and is, from its shape, difficult to cut and fit properly, and generally renders the man incased in it unable to raise his hands above his head without great exertion.

A loose tunic of softer cloth might be advantageously substituted as far as comfort and appearance go, besides giving the men the free use of their arms and lungs.

4. Cumberbund as worn is useless; three yards only of thin material, if meant as a protection to the sides and stomach, can be of little service for the purpose intended.

5. Long boots are mostly of native manufacture and fearfully unwieldy (boots and spurs alone weighing 6 lbs.); a man can with difficulty walk in them. Should the regiment have occasion to swim across a river with the horses, the chances are that the men's boots would sink men and horses. These might be advantageously replaced by thick gaiters covering the knee, the same shape as the leg part of the boot, and opening at the outside seam with a steel bar and stud; these could be worn with the fatigue dress shoes, and would protect the leg well from kicks, thorns, &c., and, unlike the boots, would not hold water.

These gaiters might also be worn over the trousers, doing away with breeches, and reducing the size of the man's kit. Further, a man wearing gaiters and shoes could walk, if necessary, without difficulty, which he could not do in the present boots.

I am informed by an eye-witness that it was a painful and ludicrous sight in Abyssinia to see the men of the 3rd Bombay Cavalry (who wear similar boots, but not so long or heavy) toiling up the steep mountain passes, where they were forced to walk, and lead their horses in hand.

Trousers and Breeches; Cloak.

These need no remark, being of good material, and as well fitting as circumstances and bad tailors will allow.

Duties and their Effect on Health.

The general duties of the sowars have been light during the past year, consisting of the usual regimental guard, escort and line duties; their average number of nights in bed have been 6·36; neither have they been subjected to greater fatigues than usual, nor exposed to depressing causes likely to originate disease.

Exercise, Amusement, and Occupation.

The means of amusement and exercise consist of a native *tallimkhana* and English gymnasium. An excellent band of brass instruments has been kept up by the European officers, which also, I have no doubt, contributes largely to the enjoyment of the men. The few who attend the English gymnasium regularly testify to its usefulness by their improved carriage and appearance; but as attendance at the English *tallimkhana* is voluntary, the men prefer their own native *tallimkhana*, and, notwithstanding every effort being made to excite their ambition, there are only very few who do attend regularly, and these principally Mahrattas: the other castes, those of the high caste especially, seem to think that there is something derogatory to their dignity in gymnastic and acrobatic feats. There can be no doubt as to the beneficial effects that would accrue from a properly conducted regimental gymnasium, but until some assistance from Government is obtainable little can be done. At present the few European officers of the regiment subscribe monthly to the gymnasium fund, from which instructors are paid, and prizes occasionally given for competition: the amount obtained in this manner is, however, very small.

Look-up Rooms and Cells.

The standard guard situated immediately in front of the lines is a solid stone building, measuring 36 feet long × 15 feet broad × 19 feet 3 inches in height, ventilated by means of windows, and adapted for twelve men forming the guard.

Hospital.

The cells for prisoners are two in number, built of stone; average dimensions 10 feet in length × 10 feet broad × 13 feet 7 inches in height, ventilated by windows well adapted to their purpose. The hospital is situated about one hundred yards south of the lines, and consists of an oblong-shaped building 154 feet long × 21·9 in breadth (*minus* verandah) facing east and west, and ventilated by doors

opening into the verandah, which runs on each side of the building; ridge-ventilation extends along its entire length. The building is divided into one long ward and three smaller ones. It is built on an elevated plinth, and exposed at all times to the prevailing winds.

The western verandah, which runs the entire length of the building, is 9 feet 3 inches broad and 154 feet long, and affords a capital promenade for the convalescents during the rainy months of the year. The eastern verandah is of the same breadth as the last, but has been interrupted in the middle to form the surgery, and at the north end for the ablution room to the female ward.

The hospital has a capacity for 29 patients, which number may be increased, if an emergency arise, by fitting up the verandah with beds and screens.

In location, solidity, and thoroughness of construction, convenience of administration, and the amount of ventilation of the wards it is not surpassed by any hospital in the Presidency. The female ward, which occupies the north end of the building, is ventilated by windows, and furnished with a bath-room to the rear. The hospital assistants' quarters are *pucka*-built, and situated on the south-west flank of the hospital enclosure. They are in good order, and afford comfortable accommodation for the hospital assistants. There are two cook-rooms on the south-east flank, one for Hindus the other for Mussulmans; these are also *pucka*-built and in good order. The quarters for the 2nd class hospital servants are on the south side of the enclosure, well adapted for the purpose, and likewise comfortable.

Its high position makes drainage simple and easily effected. The light is sufficient, and the ventilation ample and satisfactory.

Dead-house.

A single room in the extreme north-east corner of the compound (*vide* plan). It contains a *post-mortem* table, and is lighted and ventilated by windows. The hospital guard-house, large and well ventilated, stands within the principal gateway to the hospital.

Conservancy.

The dry-earth system of conservancy was effectively maintained in the hospital latrines during the year.

Hospital Water-supply.

The supply of water for the hospital is at present from wells. It is satisfactory to know, however, that in a few weeks it will be connected by pipes with Kharakwásla water-supply.

Sickness, Mortality and Invaliding.

Average strength	420
Total admissions	408
Deaths in hospital	3
Invalided...	10
Discharged with gratuity	2
Recruits enlisted	23

While having no reason to change my statements in this and former reports regarding the defective construction of the lines and apparently crowded condition of some of the huts, I am glad to be able to state that the sowars and their families have continued to enjoy a perfect immunity from any grave form of disease: nearly all the cases during the entire course of the year were of the most ordinary and accidental kind, and possessing little, if any, bearing upon miasmatic or atmospheric influences.

Statement showing Mean Strength, Number of Sick, and Principal Diseases of the 1*st Regiment Light Cavalry Lancers for the Years* 1872, 1873, and 1874.

Years	Average Strength.	Malarial Fevers.	Dysentery and Diarrhœa.	Contusion.	Boils.	Venereal.	Ulcers.	All other Diseases.	Total.
1872	450	293	68	55	50	27	19	136	648
1873	448	198	38	46	31	22	19	110	464
1874	420	100	25	58	36	30	17	142	408

Principal Causes of Sickness.

Malarial fever was the general complaint of our camp, but grave cases were rare; dysentery and diarrhœa were common in the wet season, more especially amongst the followers. I have not met with a case of typhoid fever in the cavalry camp, although there were several amongst the European infantry in the Ghorpuri Barracks; there were five cases of simple congestion of the liver, all of which recovered. Three sowars were seized with small-pox in the hot season; they were isolated at once, and thus prevented from communicating the disease. Cholera did not make its appearance in the cavalry lines, but it is known that two or three cases occurred in the Ghorpuri Bazaar. There were 17 cases of secondary syphilis, 11 of soft chancre, and only 1 of gonorrhœa.

Scurvy was quite unknown amongst the men.

Wounds, the result of kicks in stables and falls on parade, as usual swell the sick list.

Surgical Operations.

A large epithelial cancer was removed from the lower lip of a sowar in the month of April.

Two cases of hœmorrhoids were successfully treated by ligature, and several other minor surgical operations not requiring mention here.

A large fibrocystic tumour was successfully removed from the neck of a child belonging to one of the sowars.

Principal Causes of Mortality and Mortality according to Race.

There were three deaths during the year: one from valvular disease of the heart, one from debility and diarrhœa, and the other from abscess on the liver; all the above were Mahomedans.

Influence of Rain-fall.

As regards the influence of the rain-fall upon the health of the regiment, it may be said that from the time the rains begin in June till the middle of October the usual diseases the men and followers suffer from, are diarrhœa, dysentery frequently of a typhoid character, chills, and ague. During the past wet season many of the sowars suffered from a mild form of jaundice, which yielded quickly to treatment. This is also the usual season for cholera to display itself in Poona.

There are many other points which deserve notice; but only one can be touched upon here, that of typhoid fever. In the past wet season several cases of this disease occurred amongst the men and families of the 7th Regiment Royal Fusiliers: an officer of the Royal Artillery died of this disease while residing in the Ghorpuri lines. I did not observe or hear of a single case amongst the native population of the lines or surrounding villages.

I am happy to state that the regiment enjoyed a perfect freedom from epidemic diseases.

Vaccination

The hospital assistants have laboured quietly, but earnestly and energetically, to induce the sowars and native followers to resort to vaccination and revaccination as the most effectual means of preventing infection from small-pox, and crushing out the disease from amongst the native population.

General Health and Physique of the Men.

The regiment, with very few exceptions, is composed of picked and reliable men, made up chiefly of Hindus from Bengal and Mahomedans, with a sprinkling of half-castes. No doubt, I think, can exist as to the superiority of the Hindu race for all the ordinary purposes of war. I am aware that I lay myself open to criticism in expressing such an opinion; but the testimony on the subject is, however, to my mind quite clear. Half-castes are, as a rule, of a weak and susceptible constitution, and quite unequal to the vicissitudes of long and severe fatigue duties.

Resumé of the whole.

The foregoing is, in brief, the sanitary and medical history of the regiment for the past year, and I think I may fairly draw from it the following conclusions:—

1. That, notwithstanding the defective state of the lines, both as regards construction and ventilation, the sowars and their families have enjoyed a remarkable immunity from any grave form of disease.

2. That the over-crowded state of several of the married men's huts and the genera want of ventilation, joined to the humidity of the atmosphere and the absence of a drying wind and sun, are the causes which operate unfavourably upon the complaints which the sowars happen to suffer from during the wet season.

3. That of those attacked by disease none could be directly traced to the insufficiency of nourishment or the fatigues of service.

4. That the general health and physique of the men have been remarkably good.

5. That, although the cavalry lines are on a healthy site, they are rendered insalubrious by the bad local arrangements existing in the syce lines.

6. That this evil can only be removed by the erection of new lines for the regimental followers.

7. That a proper regard for the health of the men would seem to demand that some change be made in the lines. As regards especially their crowding and ventilation, however, as they were badly constructed to begin with, it would probably be more expensive and difficult to make them comfortable and healthy quarters than it would be to erect suitable new lines.

Hospital Assistants.

With the view of training the hospital assistants, as much as possible, in habits of self-reliance and mental independence in cases of emergency, and in order to interest them as much as possible in their professional duties, it has been my usual custom, since I joined the regiment, to direct their attention to all cases of any special interest, and also to examine them on practical subjects which they had previously carefully studied. Such subjects as "materia medica" and the management of the ordinary diseases met with in a native hospital have in this manner been specially brought to their notice.

H. M.'s 1st Grenadier Regiment N. I.

POONA.—In medical charge of Surgeon-Major T. MILLER; Strength,—661.

Location and Movements of Corps.

1. The regiment has been stationed at Poona during the year. No movement of head-quarters has taken place.

Detachments.

2. A detachment of 150 men was sent to Bhiwandi in the Konkan on the 25th February at the request of the civil authorities; but, as their services were not required, the detachment returned to Poona after a few days' absence. No others have been sent out during the year.

Topography and Physical Geography.

3. Poona is situated about 74 miles in a south-easterly direction from Bombay, lat. 18°·31′, long. 73°·53′, and stands about 1,825 feet above the level of the sea.

It is on the river Mutha, near its junction with the Mula, and the surrounding country is an almost level plain, except towards the south, where at a distance of a few miles there is a range of hills extending from the Western Ghâts, and which rise above the cantonment to a height of about 1,000 feet. At a distance of about fifteen miles to the west is the old Mahratta hill-fort, Singarh, which is much resorted to in the hot season by families from Poona. The fort stands about 4,000 feet above the sea-level, and has a pleasant bracing climate, except during the rains, when it is not habitable. The country towards the north and east is an undulating level plain, with in some places low solitary hills of trap formation. Near the Mutha-Mula River and Ghorpuri the soil is black loam, and the ordinary cereal crops are cultivated, and also fruit and vegetables for the Poona market. The greater part of the cantonment is formed of out-crops of trap-rock, and covered with a sandy gravelly soil of disintegrated rock or with a kind of kunkur.

Water.

Since the opening of the Kharakwásla Canal, which took place last year, the supply of water has been abundant and of good quality. There are also numerous wells which afford a supply of good water, although it is rather too hard for some purposes. Most of the wells are deep ones, the hard trap-rock having to be gone through before the water is come to. Previous to the opening of the canal the water from the Mutha-Mula River was supplied to the cantonment, but this has lately been stopped, not being now required.

Drainage.

The drainage in camp is generally natural and by means of artificially-made open drains. As the ground has good slope, and the soil does not retain the rain as it is generally hard rock underneath, there is little or no sub-soil water. In the Sudder Bazaar many of the drains are covered in, and I believe great improvements have lately been made in the drainage of this part of the cantonment.

Effects on Climate.

4. The climate is very good and at most seasons dry, though situated not very far distant from the sea. The average rain-fall is about 25 inches, but occasionally it measures a good deal more. The range of hills

on the south and west shelter the camp from the heavy fall of rain at the burst of the monsoon, so that 4 or 5 inches is about the greatest fall measured in 24 hours. The drainage and water-supply do not seem to have any bad effects on the climate, as there are no diseases which I think can be attributed to any defects of these. The soil on the east side of the cantonment is in many parts black, and being more retentive of water may be the cause of fever and bowel complaints.

Lines—available Space.

5. The space on which the lines are built is about 303 yards in length and 238 in breadth, which gives an area of 72,114 square yards. The ground in the neighbourhood is quite open, and to the east is situated the regimental and general parade grounds; the Sudder Bazaar is half a mile or so from the lines, with the bungalows for the officers between. The site is to the south-east part of the cantonment, and is dry and elevated, with a good slope towards the west; it is of a sandy gravelly soil, composed of a sort of moorum and trap-rock beneath. The huts are built in blocks, having a plinth of 12 to 18 inches in height, according to the natural slope of the ground, and each block is double, and contains 20 or 22 huts according to the size. There are 4 blocks in each row, and 4 rows for each wing of the regiment. There is an open space of about 40 yards between the wings, with a centre road running east and west, and having a width of 26 yards; and a cross street also runs through the lines, north and south, 11 yards in width. Between the rows of huts there is an open space of 70 feet in width, with a roadway in the centre, along the sides of which trees are planted. The size of the huts for the different ranks of the regiment is as follows:—

Native Officer's Hut.

	Feet.
Length	22
Breadth	17
Height, inside wall	14
,, outside wall	8
Square feet	374
Cubic feet	4,114

On each side of the hut runs a verandah of an average width of 5 feet, and in some this is partially enclosed so as to make an outside room.

Non-Commissioned Officer's Hut.

	Feet.
Length	12
Breadth	10
Height, inside wall...	13
,, outside wall	7
Square feet	120
Cubic feet	1,200

These have also a verandah on two sides of about 4 feet wide. They are not separate huts but are built on to the end of the rows of the sepoys' lines.

Sepoy's Hut.

	Feet.
Length	10
Breadth	10
Height, inside wall...	13
,, outside wall	7
Square feet	100
Cubic feet	1,000

Along the front of each hut is a verandah of about 4 feet wide; this is often partially enclosed so as to form an outside room, and is used for keeping firewood, &c.

The huts are kept in good repair, and are built of sun-dried bricks, having a foundation and plinth of stone. The roof is made of tiles, which are liable to be broken and admit the rain, but are not so likely to take fire as *chupper*. The quarter-guard room, store-room, and cells for confinement of regimental prisoners are in front of the lines, looking towards the east, and are all in one block, which is *pucka*-built of stone and lime, having a plinth

raised above the level of the ground about 18 inches, and a tiled roof. The size of the quarter-guard room is :—

Quarter-guard Room.	Feet.
Length	45
Breadth	16
Centre height	15
Height of wall	11
Square feet	720
Cubic feet	9,360

Store-room for Arms.	
Length	40
Breadth	16
Centre height	15
Height of wall	11
Square feet	640
Cubic feet	8,320

Cell No. 1.	Feet.
Length	16
Breadth	15
Centre height	15
Height of wall	11
Square feet	240
Cubic feet	3,120

Cell No. 2.	
Length	16
Breadth	12
Centre height	15
Height of wall	11
Square feet	192
Cubic feet	2,496

Along the front of the block runs a verandah having a width of about six feet.

Ventilation.

This is, in my opinion, not quite so free as it might be; there are no proper ventilators on the roof of the huts, and it is only through the door and the spaces between the tiles, which form the roof, and which are loosely laid on, no chunam being used, where fresh air can enter. A small ventilator on the roof or window in the wall would greatly improve the ventilation. As the lines are situated in an open space of ground, freely exposed on all sides to the wind, there is a perfectly free circulation of air through the different roads and streets, which mostly run east and west, and which are the directions of the most prevalent winds.

Bazaar.

The regimental bazaar is situated in rear of the lines and to their west side, being distant from them only a few yards. When the lines were rebuilt, some years ago, the bazaar was allowed to remain as it was, and thus consists of a number of huts built at different dates, and on no regular plan and varying in size. It occupies a space of ground 65 yards long and 59 yards wide, which gives 3,835 square yards, and is built in two rows, having a space of ground between measuring about 72 feet in width. The huts are built with a plinth of about a foot in height, and the walls are of sun-dried bricks, and the roof of tiles. The bazaar is, in my opinion, placed too near the latrines, which are only a few yards distant. The number of houses in bazaar is 38, and the number of persons living in them 111, which gives very nearly an avarage of 3 to each hut. The regimental school-house is on the north side of the bazaar, and is of the following dimensions :—

	Feet.
Length	72
Breadth...	22
Height, inside	17
Height of wall	11
Square feet	1,584
Cubic feet	17,776

The number of scholars attending the school is 249.

Villages.

There are no villages in the neighbourhood of the lines.

Drainage.

The drainage of the lines is chiefly natural, and is very good, as the ground has a slope towards the west. There are also artificial gutters running along the sides of the streets between the rows of huts, and these drain off the rain towards a nallah which takes a northerly course and empties itself into the Mutha-Mula River. There are small sewers leading from each hut into the gutters, and these carry off any sewage there may be from the lines. As the soil consists mostly of decayed rock or moorum, with the hard trap-rock at some little distance beneath, it does not seem to retain much of the rain, and there is little or no sub-soil water.

Tanks.

There are no tanks in the neighbourhood of the lines.

Conservancy and Sanitary Arrangements.

6. These are carried out under the superintendence of the Quarter-Master of the regiment, and are very good and well looked after. The lines are swept out every morning and evening by the regimental sweepers, of whom there are sixteen, two being employed by each company; these sweepers are paid by a monthly deduction from the pay of each sepoy and not by Government. After the sweepings have been collected they are removed by the conservancy carts to a distance from the lines. The latrines are three in number, two for the males and one for the females. They are built on the standard plan, and measure as follows :—

No. 1, Male Latrine.

	Feet.		Feet.
Length	51	Height of wall	11
Breadth	29	Square feet	1,479
Centre height	16	Cubic feet	19,966-6

This latrine contains 28 iron pans, 14 on each side, with a screen wall between The size of No. 2 is—

	Feet.		Feet.
Length	30	Outer height	11
Breadth	29	Square feet	870
Centre height	16	Cubic feet	11,745

This contains 16 iron pans, 8 on each side, with wall between.

Latrine for Females.

	Feet.		Feet.
Length	30	Outer height	11
Breadth	28	Square feet	840
Centre height	14	Cubic feet	10,500

This contains 16 pans, 8 on each side, with wall between. The pans are fitted in a sort of seat made of brick, and the floor is made of stone, with a gutter running from each seat to carry off the urine, which is not intended to be received in the iron pan but runs into a small reservoir, from which it is removed morning and evening by a cart kept for the purpose. The night-soil is also removed from the pans in the same way unmixed with the urine, and is buried in trenches at a place appointed for the purpose without the limits of the cantonment. The latrines are flushed with water every day, and quick-lime is sprinkled all over the pans and the gutters for urine. There are eight men employed in keeping them in proper order and removing the night-soil and urine. They are built of stone and lime, with a roof made of tiles, and have a plinth of about one foot in height.

Water-supply

7. The supply of water is sufficient and of very good quality. It is partly from the Kharakwásla Canal water and partly from wells near the lines, as the pipes carrying the water from the canal have not as yet been laid down through the lines.

The wells are deep, and not surface ones; and the nature of the ground around is hard and rocky. There is no particular source of impurity, except during the rains, when the overflow from a nallah, which runs close by, might get into the wells. I would suggest that the pipes carrying the canal water should be carried through the lines, so that a sufficient supply of that water could be obtained, and then the wells might be shut up and their supply discontinued. I sent some time ago two samples of the well-water to the Chemical Analyser to Government for analysis, and he reported as follows :—"The water of well No. 2, Left Wing, contains more than 40 grains of solids per gallon, and the amount of chlorine and of the ammonia of nitrates and nitrites in this water is such that it should be looked upon with suspicion. The composition of the water of well No. 1, Right Wing, does not call for any remark; it, however, requires filtration before use." The detailed report of the analysis is herewith sent. The Kharakwásla water has also been examined by the Chemical Analyser to Government, and has been reported by him as fit for drinking purposes. A copy of the analysis of Kharakwásla Canal water, kindly given me by Dr. Straker, 17th Regiment N. I., is also appended :—

Report of the Analysis of Water from Kharakwásla Canal by the Chemical Analyser to Government.

	Grains per Gallon.
Total solids dried at about 280° F.	9·52
Loss on ignition	·84
Chlorine	·57
Sulphuric acid	Nil
Lime	2·01
Magnesia	2·01
Silica	1·96
Iron and alumina	Nil
Hardness—before boiling (total)	6°54
After boiling (permanent) ...	3°25
(removable) ...	3°29
Ammonia—	
Free—In distillate from carbonate of soda (free) ...	·0031
Albumenoid—In distillate from permanganate of potash (albumenoid)	·0098
Of nitrates and nitrites	·0070
Oxygen—	
Total required by the water at 140° F. in presence of acid	·0630
Nitrous Acid—	
After evaporation to about $\frac{1}{10}$th with chloride of aluminum and redilution. } Nitrous acid.	·0402
Nitric acid calculated from ammonia and nitrates ...	·2597
Colour in stratum of 2 feet	Turbid, yellowish brown.
Odour	Earthy.
Taste	Do.
Re-action	Neutral.
Sediment ...	Small in quantity. Yellowish ochre in colour. Crystals of carbonate of lime. No organized forms discernible.

Report of the Analysis of Water from No. 1 Well, Right Wing, H. M.'s 1st Gr. Regiment N. I. by the Chemical Analyser to Government.

	Grains per Gallon.
Total solids dried at about 280° F.	22·12
Loss on ignition	·84
Chlorine	2·35
Sulphuric acid	2·60
Lime	4·23
Magnesia	2·53
Silica	2·52
Combined carbonic acid	4·30
Hardness—before boiling	5°95
After boiling	2°45
... ...	3°50
Ammonia—	
Free—In distillate from carbonate of soda ...	·20
Albumenoid—In distillate from permanganate of potash	·21
Of nitrates and nitrites	2·40

	Grains per Gallon.
Oxygen—	
Total required by the water at 140° F. in presence of acid	·0420
Nitrous acid	·0241
Colour in stratum of 2 feet	Clear and transparent.
Odour	Nil.
Taste	Nil.
Re-action...	Neutral.
Sediment... { Yellowish green flocculent vegetable *debris*. Paramecia vorticella.	

Report of the Analysis of Water from No. 2 Well, Left Wing H. M.'s 1st Gr. Regiment N. I. by the Chemical Analyser to Government.

	Grains per Gallon.
Total solids dried at about 280° F.	43·12
Loss on iguition	2·52
Chlorine	7·54
Sulphuric acid...	3·53
Lime	11·91
Magnesia	4·33
Silica	2·80
Combined carbonic acid	4·30
Hardness—before boiling	17°85
After boiling...	7°35
Removable	10°50
Ammonia—	
Free—In distillate from carbonate of soda ...	·09
Albumneoid—In distillate from permanganate of potash	·18
Of nitrates and nitrites	7·50
Oxygen—	
Total required by the water at 140° F. in presence of acid	·0420
Nitrous acid	·0322
Colour in stratum of 2 feet	Clean and transparent
Odour	Nil.
Taste	Nil.
Re-action...	Neutral.
Sediment... { Small in quantity. Whitish-coloured vegetable *debris*. Paramecia.	

8. The food supplied to the sepoy is considered to be of very good quality, and there seems to be no scarcity, and the price moderate. It consists of different sorts of flour, rice, of fish and mutton, and the quantity consumed at a meal varies. The following measures are given as showing the ordinary daily consumption of different castes:—

Diet of a Konkan Mahratta consists of rice 1 lb., bajri flour 8 ozs., mutton 2 ozs., potatoes 2 ozs., dhall 4 ozs., ghee ½ oz.

Mussulman Diet. Rice 8 ozs., wheat flour 1 lb., mutton 4 ozs., fish 4 ozs., ghee 2 ozs.

Purdasee Diet. Wheat flour 3 lbs., dhall 6 ozs., ghee 2 ozs., with occasionally 8 ozs. vegetables.

Punjaubee Diet. Wheat flour 3 lbs., dhall 6 ozs., ghee 6 ozs., with vegetables.

Konkan Purwarree. Rice 1 lb., bajri flour 8 ozs., ghee ½ oz., with a little mutton or fish.

9. The clothing of the sepoy is not, in my opinion, well suited for the natives of a hot climate. It consists of the tight scarlet coat, which is buttoned up close to the throat, and in the hot weather must be very uncomfortable. It is worn all the year round, no difference being made between the hot and cold season. The dark-blue cloth trousers are not very suitable for the habits of the native, and often cause abrasions of the skin on the limbs. The head-dress is a small dark-blue cap, without any rim or peak to afford protection from the sun, although during the hot months a puggree is worn round the cap, which to a certain extent protects the head.

Clothing.

The boots are not at all suited for the proper protection of the feet. As they are very badly fitted, and are not kept in softened condition, they are heavy, and are very frequently the cause of abrasions of the skin, producing sores which, though trivial in appearance, are often difficult to heal, requiring treatment of several weeks' duration. As the sepoy wears no stocking or other protecton for the foot, the skin of the heel often becomes like a piece of horn, and then cracks appear which give a great deal of trouble. I certainly think that sandals would be a great improvement on the present badly-fitting regulation boot.

10. The duties of the sepoy at this station are rather heavy. Besides the ordinary regimental parades, and brigade parades during the regular drill season, which begins on the 15th October and ceases at the end of March, they are also employed in supplying guards for the different jails, and in performing orderly duties. In the season they have also guards to supply to the Governor and the Commander-in-Chief. They do not seem, however, to have any very bad effects on the general health of the men; and during the rains, when the men have the most guard duties to perform, the most frequent cause of sickness is the common mild intermittent fever. They have 3½ consecutive nights in bed.

Duties and their Effect on Health.

11. The sepoy does not generally seem to take much exercise or amusement. There is a regimental "talimkhana" or gymnasium which some of them frequent, and practise jumping, wrestling, &c., and there are a few who occupy their spare time in shoe-making, and in making articles of different kinds for the annual soldiers' exhibition; but the majority does not follow any particular sort of occupation. A great many have never learnt a trade, but have enlisted from being field labourers, or children whose fathers are or have been sepoys in the regiment.

Exercise, Amusement, and Occupation.

12. These are two in number and in good repair. I have already given their dimensions in the description of the lines.

Lock-up Rooms and Cells.

13. The regiment has not made any marches during the year.

Marches.

14. The hospital is situated about 185 yards to the rear of the lines in an enclosed compound, which measures in length 122 yards and in breadth 80 yards, which gives an area of 9,760 square yards. It is built on an elevated site, the ground being dry and rocky beneath, and no depth of soil above. The drainage is natural into a nallah which runs in a northerly direction towards the river. There are no buildings in the immediate neighbourhood of the hospital except those connected with it, and it is freely exposed on all sides to the air; it is an old building but is in very good repair, and is built on a plinth of about 2½ feet high, and the roof is made of chupper. On three sides it has a verandah of the width of 8 feet. There is also a separate ward of more recent construction, which measures 40 feet in length and 22 in breadth, the height of wall being 11 feet, which gives 880 square feet and 9,680 cubic feet. This has a plinth of about 2 feet in height, and a verandah all round of a width of 5 feet.

Hospital and its Surroundings.

For the treatment of contagious disease, as small-pox, there was erected, two years ago, a chupper hut, built on a permanent plinth of about 1 foot in height, and measuring 50 feet in length, 21 in breadth, centre height 13, and the outer wall 7 feet, giving 1,050 square feet and 10,500 cubic feet. The houses for the hospital servants are built at a considerable distance from the main building, and also the cooking pendalls for the patients.

15. This is very good, and not at all confined. There are two of the old-fashioned ventilators on the roof of the hospital, but it is chiefly through the doors and windows that it takes place. The windows are on each side of the buildings, opposite one another, and also the doors are placed so that there is always a through draft, and there are no obstructions on the outside to the free circulation of the air.

Ventilation.

16. There is no over-crowding, as the ward is large, and measures 96 feet in length, 22 in breadth, and the wall 16 feet in height, which gives an area of 2,112 square feet and 33,792 cubic feet. As the average number of sick is 21, this allows of 1,609 cubic feet for each patient. There is, besides this, the separate ward which can accommodate 8 beds, and allows about 1,200 cubic feet for each.

Over-crowding.

17. The accommodation is very good, and consists of the wards before-mentioned, of an office room, a store-room, a dispensary room, a bath-room, and a dead-house. The 1st hospital assistant's quarters are not quite so comfortable as might be; and the cooking pendall is also defective, as it has no protection from the wind or rain on the front.

Accommodation and Defects.

Those most urgently required are new quarters for the hospital assistant, and a screen wall to protect the patients while cooking in the pendall above-mentioned.

Improvements.

At present what is required is the repair of the roof of the quarters of the 2nd hospital assistant, and also of the sweepers' room which were lately destroyed by fire, the origin of which was, I believe, accidental.

Requirements.

18. The hospital conservancy is carried on by means of two sweepers, who clean the compound every morning, and the latrines morning and evening, and the night-soil and urine are removed to a distance and buried in the same manner as that from the regimental latrines. The floors of the latrines are flushed every day with water, and disinfecting powder used. The latrines are two in number, and placed at one end of the hospital, to the south, and a covered passage, some yards in length, runs from one to the other. They measure in length 12 feet, breadth 10, centre height 17, and height of wall 11 feet, giving 120 square feet and 1,680 cubic feet each. There is a verandah along one side, of about 3 feet in width, and each latrine has five iron pans

Conservancy.

19. The water-supply of the hospital is good and from the same sources as that of the lines. There are two hand-bheesties allowed for the hospital establishment, and there is a large leather mussuk hung in the compound which is kept always full. It is proposed to have pipes laid on to the hospital from the main pipe near the lines, and which would be a great improvement, and one bheestie at least might be done away with. The quality of the water is very good, and I have no reason to suspect it of being the cause of any particular complaints

Hospital Water-Supply.

20. The sickness during the year has not been great, and rather less than during the previous one, the total number of admissions during 1874 having been 605, against 655 for 1873. The decrease has chiefly been in the number of cases of malarious fever treated, there having been 274 for 1874 against 322 for 1873, which gives a decrease of 48 in that class alone. Dysentery has not been prevalent, there having been only 25 cases treated, mostly of a mild character, and which were treated in the usual manner with ipecacuanha. No cases of hepatitis were under treatment. Of other diseases the most prevalent were rheumatism, of which 31 cases were treated, lung diseases were 29 in number, contusions of lower extremity were 88, and of abscess there were 33 cases under treatment. The mortality was small, 4 deaths having occurred; the deaths to strength amounted to 0·6 per cent., and the deaths to treated was about the same percentage.

Sickness, Mortality, and Invaliding.

The number of cases invalided during the year was 14—Hindus 10 and Mussulmans 4. They were all men entitled to a pension and there were no special cases of men of short service.

21. Have been ague, rheumatism, dysentery, bronchial catarrh, diarrhœa and colic, contusions, abscess, and ulcers.

Principal Causes of Sickness.

22. Have been pneumonia and malarious fever, which assumed a remittent form.

Principal Causes of Mortality.

23. For Hindus 0·7 per cent. No deaths occurred amongst the other races in the regiment.

Mortality according to Race.

24. The amount of rain which fell during the season does not seem to have influenced either the sickness or mortality in any marked degree. Although the rain-fall was greater this year than last, the number of admissions for many diseases is considerably less, especially those caused by malaria. The total rain which fell during the twelve months was 38 inches 74 cents, which is considerably above the average. The heaviest rain-fall in one month was 8 inches 13 cents for October. During that month there was no disease which could be attributed to the influence of the rain-fall, as the admissions were much the same in number as during the dry season.

Influence of Rain-fall.

Epidemics.

25. There has been no epidemic disease of any kind in the regiment.

Vaccination.

26. Vaccination has been carried on as children were available. The total number successfully operated on was 95; of these 87 were the children of sepoys and 8 children of followers. The number of revaccinations has been small as during the two or three previous years; those who required it were operated on. Only 2 were revaccinated.

General Health and Physique of the Men.

27. The general health is very good, and the physique of the majority is good. Some of the men seem to have been enlisted at an age considerably above the usual one for taking recruits, and these, of course, show an appearance of age and of being rather worn out, which they would not have otherwise done. The most of these appear to have been enlisted about the time of the mutiny, or shortly afterwards, and I suppose they were taken as it might have been difficult to get better men.

Treatment of Disease when special.

28. The treatment employed has been that usually followed in the different classes of disease, and not in any way special.

Special Observations.

29. I have no special observations to make, except to the style of the clothing of the sepoy, which I do not think is at all well suited for a native of this country, and should be altered to some other pattern. The way in which pensions are given should also be changed, and a man allowed to retire after a certain number of years' service without having to appear before a Medical Board, and which leads to a good deal of shamming for weeks before the annual invaliding committee assembles.

Resumé of the whole.

30. From what has been stated it will be observed that the regiment has been in very good health during the year, and that the lines and hospital and the different buildings connected with them have been kept in good repair; that the conservancy and sanitary arrangements have been looked after and properly carried out, that the ventilation is generally good, and the buildings not too much crowded together. The water-supply is also abundant and of good quality, with the exception of one well, which is suspicious.

The accommodation is sufficient, there being 688 huts in the lines for an average strength of 661, and in the hospital a cubic space of 1,609 feet for each patient, taking the average daily sick at 21. There has been no cholera or small-pox amongst the men or families; 14 cases of very mild chicken-pox occurred during the year. The total number of admissions was 605, which with 38 remaining from 1873 gives 643 as the total number treated; of these 620 have been discharged, 4 died, and 19 remain. The average daily number of sick was 21·6, the average daily percentage of sick 3·2, the percentage of total treated to strength 97·3, the percentage of deaths to strength 0·6, and the percentage of deaths to treated 0·6. The most prevalent diseases have been ague, dysentery, diarrhœa, colic, bronchial catarrh, and contusions of the extremities, as shown by the return herewith sent. Diseases of the eyes have not been prevalent, and were mild in character, requiring no special treatment, with the exception of one case of gonorrhœal ophthalmia.

Primary syphilitic affections had not been numerous, 10 only having been treated. Four deaths occurred—2 from pneumonia and 2 from fever of a remittent type. There were invalided during the yeer 14, 2 on account of paralysis, 1 bronchitis chronic, 1 debility and eczema, 1 chronic rheumatism, 1 debility and hœmorrhoids, 1 fracture of thigh, 1 bronchial catarrh, 5 on account of general debility, and 1 a case of dementia, a sepoy of the 14th Regiment N. I., who was invalided by the Surgeon of his regiment at the camp of exercise at Chinchwad, and afterwards attached to the 1st Grenadiers, until his case was disposed of by the authorities,—his own regiment, the 14th N. I., having marched to their own station, Kolhápur. Six cases were sent on sick leave; 20 recruits were enlisted, of whom 18 were Hindus, 1 Mussulman, 1 Native Christian. The total amount of rain which fell during the year was 38 inches 74 cents, and the greatest fall of rain in one day 4 inches 14 cents. This is considerably above the average fall, which is considered to be about 25 inches. The highest temperature, as taken by a common thermometer in the open verandah of the hospital but not exposed to the rays of the sun, was 100°, and the lowest 50°. The observations were made about 6 A.M. and 4 P.M.

Medical Instruction.

31. The medical subordinates have received instruction during the year in the application of bandages, the setting of fractures, and application of splints and of starch bandages, in the dressing of ulcers, the application of the cupping glasses and tourniquets, the giving of sub-cutaneous injections, the usual treatment of the diseases admitted. The instructions have not hitherto been given on any particular day of the week, but as opportunities occurr d, and at the time of the morning visit.

H. M.'s 8th Regiment N.I.

Poona.—In medical charge of Surgeon-Major E. Sexton; Strength, 665.

The average strength of H. M.'s 8th Regiment N. I. during the year 1874 was 665, the admissions into hospital were 619, and the deaths 2.

These numbers give the proportions of 970·22 admissions and 3·13 deaths per thousand of mean strength.

Location and Movements of the Corps.

1. The beginning of 1874 found the regiment stationed at Poona.

At a late hour on the evening of the 16th of February, orders were received for the regiment to hold itself in readiness to leave for Bombay on the following morning; and at 3 A.M. on the morning of the 17th, the whole of the available strength of the corps assembled at the Poona Railway Station, and started at day-break for Bombay, where it arrived at an early hour the same afternoon.

On arrival at the Presidency the troops were, without loss of time, encamped on the Esplanade, and were variously employed during the Mohurrum festival and the few weeks that followed, in guard, patrol, and picket duties, in the most disturbed quarters of the native part of the city.

On the 13th of March the head-quarters and left wing of the regiment returned to Poona, the right wing remaining at the Presidency until the 2nd of May, when it rejoined head-quarters.

During the remaining portion of the year the regiment was employed in the usual guard, parade, and other garrison duties of a large cantonment, and for the last two months was busied in the construction of new lines.

Detachments.

2. In addition to the movements to and from Bombay the only detachments during the year were a party, consisting of 12 privates and non-commissioned officers, sent as a treasury guard to Junnar on the 12th of July, which returned on the 21st of November; another party of similar strength and for a similar purpose was detached to Khed on the 12th of July, and returned on the 14th of November.

Topography and Physical Geography—Soil.

3. Poona is 63 miles from the sea as the crow flies, and stands at an elevation of about 1,800 feet above sea level, on a plain that stretches eastward for about twenty miles along the course of the Mutha-Mula River.

The city is built on the Mula River, extending for about a mile and a half along the right bank and within a quarter of a mile of the *Sungum*, or confluence of the Mutha with the Mula. The river-bed has an average breadth of about 550 feet, but is full only for a short time after having rain. For a few months before the setting in of the annual rains it usually dries up into a chain of pools or water-holes containing very little running water.

The rock is amygdaloidal dolerite, the beds of which vary a good deal; in some of them the rock disintegrates into a light soil that dries quickly, while in others it yields a more retentive earth or clay. The most prevalent rock is a slightly reddish trap, porous and rich in zoolites.

Water.

The wells are, as usual, in depressions of the ground; they are all excavated in the solid rock, and have the upper portion lined with stone masonry. The cantonment wells vary in depth from 30 to 67 feet. They give water in limited quantity, and only during part of the year. They are fed by the infiltration of rain that falls in their near neighbourhood, and in ordinary years most of them dry up before the beginning of the hot season.

Fifteen years ago a masonry dam was built across the Mutha-Mula River, and an engine was erected to raise the ponded water to such a height as to enable it to be distributed by a pipe to the Sudder Bazaar. Unfortunately the bund was built below the city instead of above it, where the impounded water would have been comparatively pure: now the water, is contaminated by the drainage of the whole of the native city before it is ponded. Owing to the great scarcity of water experienced in former years, especially during the hot season, and the necessity that existed for a constant and copious supply of good water, not only to the cantonment and troops, but also to the followers and inhabitants of the bazaars, an extensive scheme of combined irrigation and water-supply was projected by Government, and is now being carried out in a very complete and effective manner.

The scheme, which, as stated above, embraces both irrigation and water-supply, consists essentially of a dam 120 feet high—constructed about thirteen miles above Poona, by which means a body of water is impounded that affords practically an unlimited supply to both the city of Poona and the cantonment—and a canal on the right bank of the river, which passes close to the Parbuttee Tank, thence to the neighbourhood of St. Mary's Church, and finally leaves the cantonment on the opposite side of the military parade ground, to flow to the districts it is intended to irrigate.

Drainage.

The highest part of the city is estimated to be above seventy feet above the level of the river, and the whole surface of the ground is favourable to natural drainage, having a fall towards the river and also towards two water-courses, named Manick Nallah and Nagzari, on the south and south-west. The ground on the south-west of the city has its natural drainage by the Umbil Nallah that runs near the conical hill on which the temple of Parbuttee stands, and which, as well as the two water-courses already mentioned, joins the Mutha River.

These nallahs have flowing water only after heavy rain but there are few months throughout the year in which there is not rain enough to fill any pools there may be in the water-courses, even if not sufficient to produce a stream.

A nallah which nearly always contains running water crosses the Sacha-Peer Road, where it divides the Portuguese cemetry from a Mussulman grave-yard. Both burying places are, I understand, still in use—a very objectionable arrangement, as the whole of the drainage from both grave-yards finds its way into the river. I would specially call attention to the ruinous state of the Mussulman burial-ground, which is not even fenced off from either the nallah or the ordinary roadway passing in front.

Effects on Climate.

4. The rain-fall last year was abundant all over the Deccan, especially towards the end of the rainy season; and the quantity registered in October was, I believe, considerably above the average.

The following tabulated statement shows the monthly rain-fall during the year:—

	January.		February.		March.		April.		May.		June.		July.		August.		September.		October.		November.		December.	
	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.	Inches.	Cents.
Amount of rain-fall in 1874.....	..	..	..	67	..	..	..	18	1	46	8	77	5	94	4	3	8	91	6	44	..	43	..	7

In regard to temperature, no very striking deviation from the average monthly mean temperature occurred throughout the year 1874.

The following were the readings of the thermometer from January until December:—

	Max.	Med.	Min.
January	89	75	61
February	82	73	65
March	88	79	70
April	93	85	77
May	91	84	78
June	99	87	75
July	80	77	74
August	78	74	71
September	79	76	73
October	81	75	70
November	81	72	64
December	79	71	64

5. The present site having been condemned, the troops are busily engaged in the construction of new lines to the eastward of those now in occupation. The new buildings are to be erected on the western edge of the elevated plateau forming the military parade ground, and will be a continuation of the lines of the two other native regiments quartered here, and situated on a ridge sufficiently well-sloped to ensure thoroughly efficient drainage.

Lines—available Space.

The situation of the present lines is open and well exposed to the breeze, and no fault can be found with the site on the score of deficient ventilation.

Ventilation.

The regimental bazaar is situated in rear of the lines, and seems to be well managed and carefully superintended.

Bazaar.

There are no villages in the vicinity of the present lines, which are situated close to the residences of the principal civilian and staff officers living in the station.

Neighbouring Villages.

The site of the lines now in occupation is low, and too level to admit of effectual drainage; and in the hot season many of the sepoys' huts are flooded, often for several days at a time. This has formed one of the chief objections to the present situation of the lines.

Drainage.

There are three tanks in use for supplying water; and there is, in addition, a sheet of water in the immediate vicinity of the lines, occupying the hollow of an extensive quarry, which latter is now availed of for the construction of the new lines, with which it has been connected by an excellent tramway, constructed under the superintendence of Lieutenant-Colonel Wahab, of this regiment. The deeper portion of the quarry contains a considerable amount of water during the rains, and is extensively used by the troops for washing, bathing, watering cattle, and other useful purposes.

Tanks.

6. This is effectually carried out. The latrines are three in number—two for men and one for women. They are covered in, and situated at a convenient distance from the lines. A filth-cart removes the fœcal deposit twice a day, but there are no effectual precautions against soakage.

Conservancy and Sanitary Arrangements.

7. Is ample and of good quality. Three tanks in front of the lines are supplied with Kharakwásla water, and are carefully built of well-faced masonry; and there is, in addition, a well situated at some distance to the north-east of the lines. One tank is used by Brahmins, Mahomedans, and Jews; another is appropriated by the Purwarrees; and the third is allotted to the Mochees of the regiment. The Purdasees in general prefer to fetch their water from the well previously mentioned as situated on the north-east of the lines.

Water-supply.

I am not aware of any serious imperfections in the foregoing arrangements In regard to sources of impurity, it must be borne in mind that contamination of the water supplied from Kharakwásla can only arise from leakage or imperfection of the pipes. Up till the present I have heard no complaints on the subject. As regards the well-water, the only danger of pollution arises from its vicinity to the latrines, which are sufficiently near to offer a risk of contamination; and when it is remembered what a considerable area is drained by a well of any depth, especially when the surface of the ground is pretty level, it will be considered that the case is one calling for the most watchful and untiring care on the part of the sanitary authority. As the lines are about to be abandoned, it is not expedient to offer any suggestions regarding an increased supply of Kharakwásla water in this locality; but it would, I am of opinion, be well to discourage the use of well-water for drinking purposes as much as possible, and an endeavour should be made to induce the whole of the troops to avail themselves of the water supplied from the pipes.

Imperfections, Sources of Impurity, and Suggestions regarding.

Food—Quality of, and whether abundant and cheap.

8. Food supplied during the past year was generally abundant, reasonable in price, and of good average quality.

The clothing of the Bombay sepoy is as yet untouched by a breath of the sweeping reform which has wrought such sanitary changes in the dress of the European portion of the Indian Army. Hot weather and cold, wet season and dry, he wears when on duty the same tight tunic, the same unsightly trousers, and the same grotesque head-covering, which is not the most suitable for a native soldier on the plains of Hindustan. His boots, too, of English pattern and native workmanship, are a source of continual trouble and occasional torture, and seem as if calculated to injure, rather than to protect the feet, they are designed to cover.

Clothing.

Duties, and their Effect on Health.

10. The duties of the troops during the past year do not seem to have exercised an unfavourable influence on health.

A good many cases of fever have usually come in from the Yerauda Jail guard, especially during the hot weather; but this ought, I think, to be properly set down to the defective character and other faults of the head-dress of the native infantry soldier, which neither affords protection to the head nor shade to the eyes. Since the commencement of the building of new lines a large number of cases have occurred of cuts, bruises, sprains, contusions, and similar kinds of accidental injury. In most cases these are caused by awkwardness in handling new and unaccustomed tools; and in a few instances men have had their feet injured and toes crushed under the wheels of tramway waggons. It may be expected that accidents of a similar kind will become less frequent as the men grow more experienced in their work and more handy in the use of pick and shovel. A few cases have also occurred of somewhat serious accidents resulting from what is termed "sky-larking" among the recruits and younger men while at their work; and I have had to call the attention of the Superintending Officer to the matter with a view to putting a stop to all such dangerous exhibitions of horse-play.

Exercise, Amusement, and Occupation.

11. Little is to be said under the above heading. Native regiments are not supplied with reading or recreation rooms, or any other means of varying the monotony of a soldier's life in cantonments; nor in the present condition of the Native Army could such means of recreation of a purely intellectual character be with propriety introduced. Something might, however, be done to spread the blessings of education amongst the ignorant masses of the Native Army.

There is an excellent girls' school in the regiment, and the boys' school is also, I believe, established on a satisfactory footing. These might be made the nucleus of more extended operations, and the good flowing therefrom cannot be over-estimated. More encouragements, too, by means of prizes and badges, to be annually competed for, might be given for proficiency in wrestling, running, leaping, and vaulting; and fencing and single-stick might be practised with a view to amusement as well as instruction. At present a certain number of men selected for the purpose go through a course of instruction in gymnastic exercises in order to qualify as instructors; but means might be taken to make the practice of gymnastic sports less of a duty, and more of a means of recreation, than has been hitherto attempted. If, in addition to the foregoing, such educational facilities could be provided as to enable the mass of our sepoys to work simple sums in arithmetic, to express their thoughts in writing, and to read books, combining amusement with solid instruction, it would further the cause of progress and civilization very materially and improve the *morale* of the sepoy in a corresponding degree.

Lock-up Rooms and Cells.

12. These are two in number, and situated close to the staff hospital. They are substantially built, dry, cool, and well ventilated.

The regiment is an extremely well-conducted one, and the cells are, I am happy to state, rarely tenanted.

Marches.

13. The regiment having, with the exception of the time employed on duty in Bombay, remained in cantonments during the year, no marches of any length were undertaken by the troops.

Hospital and its Surroundings.

14. The hospital is a well-built, substantial structure, roofed with tiles, and possessing a stone floor. It consists of two large airy and cheerful-looking wards, resting on a sound substantial plinth, and amply provided with doors and windows.

One of these wards is allotted to surgical and the other to medical cases.

Between the wards is a well-lighted surgery, which is also sometimes used as an operation room. Immediately in front of the hospital, and fenced off from an open *maidan* which extends in a direction due north, is a small but well-kept garden, which affords an agreeable lounge for convalescent patients. The hospital assistants' quarters, servants' houses, and store-rooms are in rear of the hospital, and are all complete and in good condition.

Ventilation.

15. The ventilation of the hospital is very good considering the circumstance that it faces north and south instead of east and west, and so presents its gables to the prevailing breezes. Notwithstanding this

defect, the building is, in respect to height, width, and airiness, everything that could be desired; and, taken altogether, the hospital is one of the best for native troops I have seen in this Presidency.

16. No epidemic having occurred during the past twelve months, there was no demand for additional hospital space, and, consequently, no over-crowding.

Over-crowding.

The following were the averages of cubic space and superficial area allowed to each patient throughout the year:—

Medical Ward...	Average cubic space	3,226.
	Do. superficial area ...	233.
Surgical Ward..	Average cubic space	3,459.
	Do. superficial area ...	227.

As a rule, amongst native regiments the greatest demand for additional hospital accommodation occurs during the cold weather, when increased space may always be provided, and an excellent sick ward improvised, by pitching a hospital tent, or even the ordinary sepoy's rowtee, which can be obtained at almost every station in India.

17. As the lines are about to be removed to another locality, and there is also a question of moving the hospital from its present site, it is not necessary to consider the subject of improvements, except such as are absolutely indispensable, and which naturally fall under the next head, viz., that of:—

Accommodation and Defects.—Improvements.

Requirements.

These are—1st, dead-house; 2nd, a contagious ward; 3rd, a room for operations

In regard to the first, it may be here stated that there is absolutely no place for making a *post-mortem* examination, which may at any moment be necessary, not only in the interest of science, but for securing the ends of justice.

The wards of the hospital have, it is true, been more than once used for this purpose; but apart from the impropriety of exhibiting so ghastly a spectacle as the dissection of a human body before the gaze of the inmates of a hospital, no prudent surgeon would, it may be presumed, be willing to expose his patients to the fearful risks involved in such a proceeding; and as a matter of fact, in the case of the death of a child which occurred in the lines some short time ago, under such circumstances as to render an inquest necessary, the body of the deceased infant had to be sent to the civil hospital for examination.

(2.) It is no less necessary to insist on the importance of having a separate contagious ward attached to the hospital. Diseases such as small-pox, erysipelas, and cholera, whose infective character, direct or indirect, may be considered as placed beyond dispute, are common enough in this country to render it superfluous to dwell upon the necessity of possessing a separate ward for the treatment of such affections.

(3.) The third requirement, that of providing an operating room, is not of such importance as the two preceding. Operations, at any rate serious ones, must in peace time be necessarily of rare occurrence in the hospitals of native regiments; and as regards the hospital of the 8th N. I., the surgery is well suited for ordinary cases, and only requires a good strong table to be all that can be desired—the only objectionable feature being, that operations have to be performed within sight and hearing of the patients of both the surgical and medical wards. Should the construction of another hospital near the new lines be sanctioned, a detached room, which could be used indifferently as an ophthalmoscope room and for operations, might be constructed at a trifling addition to the cost of the whole building.

Sanction has been obtained for the construction of a cheap contagious ward, and in the absence of other accommodation this might, when necessary, be used as a place for making a *post-mortem* examination—care being taken that the interior air space be well ventilated and disinfected every time it is used for purposes of dissection.

Recommendation.

Finally, it must be remembered that, while the future site of the hospital remains in doubt, any improvements that may be effected in the present structure ought to be carried out on the most economical principles.

18. This is carried out in a very complete and effectual manner. There are two well-constructed latrines for the use of the patients, one for men and the other for women. The latter, save in the somewhat rare instance of a female being an in-door patient, is used exclusively by the female relations of the hospital servants. Both latrines are covered in, and are constructed on the same

Conservancy.

principle. The one allotted to the male patients contains six compartments, separated by partitions high enough to secure privacy without obstructing the ventilation. The latrine for females only contains one compartment, and the accommodation in this case might with advantage be enlarged. The men's latrine is furnished with seats of convenient height, having a gutter running the whole length, from one end of the latrine to the other, in front of the seats. Each seat is fitted with an iron receptacle coated with pitch, which is cleaned out daily, and the contents removed in a filth-cart. The liquid sewage finds its way into the gutter together with the water which all natives are accustomed to use so plentifully on such occasions, and runs out at either end, where it is received in large earthen vessels counter-sunk in the ground. The liquid and solid portions of the sewage being thus kept separate, putrefaction takes place slowly, and the patients are enjoined to observe the strictest care and cleanliness, so as to ensure a proper working of the system. The latrines, besides being white-washed at short and repeated intervals, are daily disinfected with carbolic acid; and the regulation in force among the sweepers is, that absolute freedom from offensive odours of every sort is made the criterion of cleanliness and the test of efficient work. The only suggestions I feel called upon to make, with a view to an improved working of the system, are the substitution of a tiled gutter for the inefficient chunam pavement now in use, and the provision of an additional filth-cart, which might make two daily calls instead of one.

Hospital Water-supply.

19. This is obtained from the arsenal tank. The water is ordinarily of good drinking quality, and the supply ample.

Some four months ago a board, composed of Engineer and Medical Officers, met to consider the subject of supplying the regimental native hospitals with pipe water; and it was found that Kharakwásla water could be laid on at a cost so trifling that the whole expense might be recouped in a short time by the saving effected in the wages of one bheestie. An officer connected with the Irrigation Department examined the position of the hospital compound, and pointed out where it would be desirable to erect a stand-pipe; but I am not aware that any further steps have been taken to carry the recommendations of the committee into effect.

I append an analysis of the Kharakwásla water furnished by the Acting Analyser to Government, who declared the water "fit for drinking purposes"—

	Grs. per Gallon.
Total solids dried at about 280 F.	9·52
Loss on ignition	·84
Chlorine	·57
Sulphuric acid	Nil.
Lime	2·01
Magnesia	2·01
Silica	1·96
Iron and aluminia	Nil.
Hardness—before boiling (total)	6°54
After boiling (permanent)	3°25
(removable)	3°29
Ammonia—	
In distillate from carbonate of soda (free)	·0031
In distillate from permanganate of potash (albumenoid)	·0098
Of nitrates and nitrites	·0070

Sickness, Mortality, and Invaliding.

20. The total number of cases of disease treated in hospital during the year 1874 was 646, the total number of patients discharged 593, and the total number of deaths 2. Three patients were re-admitted for diseases other than those for which their names were first placed on the register, and 19 convalescents were sent to their homes for change of air.

The foregoing returns show a marked reduction in the prevalence of disease, and an increase in the mortality, as compared with the previous year.

The total number of admissions into hospital in 1873 was 853, or 1,312·3 per thousand; whereas in 1874 the admissions were but 619, or 970·22 per thousand. In 1873 the total number of deaths was 1, or 1·53 per thousand of strength and 1·17 per thousand of treated, and in 1874 there were 2 deaths, or in the ratio of 3·13 per thousand of strength and 3·23 per thousand of treated. These figures show a very low mortality as prevailing over a considerable period of time: moreover, one of the two deaths which occured last year followed a severe surgical operation, and might, therefore, in strictness be fairly excluded from our consideration in comparing the results of the two years. Were this source of error eliminated, the mortality of 1874 would present nearly as favourable an aspect as that of 1873, and would be in the proportion of 1·61 per thousand of treated and 1·78 per thousand of strength.

In reviewing the condition of the regiment throughout the year, and the various diseases affecting its health, it will be found, as may be supposed, that the causes of sickness varied a good deal, according to season, temperature, the duties on which the troops were employed, and the influences to which they were exposed.

In January affections of the bronchial tubes and pulmonary mucous membrane prevailed to a considerable extent, and only 5 cases of ague were received into hospital. A good many cases of contusion, caused in every case by wearing ill-made and ill-fitting boots, were also admitted.

During the month of February the regiment, as previously stated, proceeded to the Presidency, leaving behind the sick and infirm, and a few men for line and regimental duty at this station. In the course of the following month the head-quarters and left wing of the regiment returned to Poona, leaving the right wing at the Presidency. While in Bombay the regiment was generally very healthy, and only 3 cases of ague and 5 of bronchitis were admitted into hospital during the month of March.

April was also a healthy month, only 22 cases of illness having been admitted. Of these, 6 were cases of various forms of intermittent fever and 3 of venereal disease.

In May the returns of sickness were swollen by the arrival of the right wing of the regiment from Bombay. During this month there were 52 admissions into hospital, of which 30, or more than one-half, were cases of intermittent fever; 4 cases of dysentery were also treated this month.

June was characterized by the abundance of its rain-fall and its favourable atmospheric conditions; and the returns show a marked decrease in the number of cases of illness received into hospital. Only 38 admissions in all took place during this month, of which 12 were cases of ague, 2 of rheumatism, and 2 of bronchitis.

July was also a healthy month. The returns show 31 admissions, of which 12 were for ague and 5 for bronchitis. A case of remittent fever, characterized by heightened temperature, abdominal tenderness, and other typhoid symptoms, was also treated during this month.

The returns for August are less favourable, the number of admissions having risen to 55. Of these 26 or nearly one-half were cases of intermittent fever. Four cases of dysentery, generally of a mild form, and 4 cases of bronchitis were also admitted this month.

September and October are usually considered unhealthy at Poona. These months in 1874 formed no exception to the general rule. In September the number of admissions rose to 62; but there was no corresponding increase in the frequency of ague, the cases of which only numbered 22, or about a third of the whole. There were also, during this month, 9 cases of inflammatory affections of the bronchial mucous membrane, and an unusually large number of cases of so-called "contusion," mostly blisters and abrasions of the cuticle, often ending in obstinate, and intractable ulceration, and all resulting from the same *fons et origo mali*, viz., ill-made and badly-fitting boots. In October there was the usual prevalence of intermittent fever, but no cases of a severe type were admitted. One case of localized suppuration of the lung, resulting from an attack of pneumonia and ending in pulmonary gangrene, was also treated this month. The case was an interesting one, and made a good recovery.

In November the regiment began the construction of new lines, and the men were, consequently, a good deal exposed to the trying atmospheric changes and rapid transitions of temperature so common at this season of the year, when cold nights alternate with hot days, and the range of temperature is often considerable. Notwithstanding these adverse influences the health of the troops was well maintained this month. The number of admissions was 63, of which, 28 or nearly one-half were cases of intermittent fever, catarrhs, and

other affections of the pulmonary mucous membrane, were less numerous than might be supposed, considering the season of the year and the unusual exposure the troops were subjected to. There was a remarkable absence, this month, of diseases affecting the stomach and bowels; but, on the other hand, accidental injuries were, as might be expected, unusually high.

The number of admissions in December was again high, and amounted to a total of 87. The excess is, however, to be accounted for by the large number of accidental injuries that occurred during the month. Of the total number of admissions this month, 24 were cases of different forms of intermittent fever, the quotidian variety being the most frequent. Cases of catarrh and bronchitis were less numerous than is common at this season, but the weather was unusually mild and warm for the month of December.

Reviewing the returns for the year as a whole it may be noted that the admissions and deaths have been below the average of several preceding years. As compared with the year 1873, there has been a marked decrease in miasmatic and nervous diseases and diseases of the digestive system, and an increase in diseases of the respiratory system.

There has been a slight decrease in the number of accidental injuries, whilst diseases of the eye and its appendages do not show any material difference.

Of particular diseases the returns show that eruptive fevers were above the average, from the occurrence of several cases of chicken-pox at the beginning of the year. Only one case of hepatitis—a chronic one—was admitted, and the infrequency of this form of affection amongst native troops is certainly a noteworthy fact. There was also a remarkable absence of continued fever, not a single case of which occurred throughout the year.

Remittent fever, too, was rare—only two cases, both, however, accompanied by typhoid symptoms, having been admitted in 1874; rheumatism was also less prevalent, and below the average of several years. There was a slight increase in the syphilitic group of affections, which may be in part attributed to the imperfect organization of the sanitary administration here and the defective working of the Contagious Diseases' Act.

Parasitic diseases show about the same number of cases as in 1873.

Guinea-worm was the prevailing form of affection in this class.

Diseases of the circulatory system were much less numerous, and there was also a decrease in the cutaneous group.

Deaths. Only two deaths took place in 1874: one, at the beginning of the year, from chronic dysentery, of an old and infirm patient who had long been suffering from bowel disease. The other death, which occurred in July, followed the operation of cutting for stone.

Invaliding. Twenty men were invalided by the Annual Invaliding Board.

The following were the causes for which the invalids were declared to be no longer fit for service:—

Asthma and dilatation of heart	1
Cataract	1
Chronic bronchitis	3
,, rheumatism	5
Epilepsy	1
Hemiplegia	1
Ichthyosis	1
Leprosy	1
Old and worn out	3
Paralysis...	1
Syneche	1
Valvular disease	1
Total...	20

Principal Causes of Sickness. 21. Of these, first in order comes ague, of which there were 205 cases of admissions; next contusion with 60 admissions; then bronchitis, which shows 43 admissions; catarrh 34; rheumatism, chronic and acute, 27; syphilis, primary and secondary, 23; ophthalmic affections, 16; dysentery, 11 cases; and diarrhœa a similar number.

Another great cause of sickness, or rather apparent sickness, remains to be noted, viz., malingering, of which a good number of suspected cases come under notice during the year 1874. In my annual report for 1873, I wrote very fully on this subject, and expressed my

opinions very unreservedly; as also on the pension rules and the present mode of enlistment. It would, I think, be impossible to exaggerate the evils flowing from this system, which, without effecting a single good object, give rise to a wide-spread—indeed, judging from my experience, I may say universal—practice of feigning illness, demoralizing to the sepoy, damaging to the character and *prestige* of the Native Army, and unjust to the Medical Officers of the service who, while doing their utmost to act according to their lights and convictions, are often placed in a false and embarrassing position.

Principal Causes of Mortality.

22. As only two deaths occurred during the whole year, one of which followed a severe surgical operation, it is impossible to draw any useful inferences from the returns under the head of mortality.

Mortality according to Race.

23. The same remark applies with equal force to this para.

Influence of Rain-fall.

24. I cannot undertake to say what, if any, influence on the general health of the troops can be traced to the copious rain-fall of last year. There was no doubt a visible improvement, as evidenced by the diminished number of cases in almost every group of disease, but the question of *post hoc* or *propter hoc* still remains undecided.

Doubtless by affecting the price of provisions, and so giving the troops greater stamina and increased powers of resistance to the inroads of disease, the rain-fall of 1874 has had, indirectly, a very powerful influence in contributing towards the general improvement of last year.

Epidemics.

25. Cholera did not prevail in an epidemic form in or about Poona during the past year.

One or two isolated cases were said to have occurred, but there were only vague rumours on the subject, and no reliable information reached my ears.

Vaccination and Revaccination.

26. Vaccination is strictly attended to and carefully carried out. The whole regiment was, I believe, revaccinated a short time back by my predecessor, Dr. Adey, and there is not a single unprotected sepoy now serving with the corps. The troops being busily engaged in building new lines, it would be manifestly inconvenient to carry out a course of revaccination at the present moment.

General Health and Physique of the Men.

27. It is difficult to offer opinions on this subject without running the risk of making statements that may be open to considerable objection.

The rules which regulate recruiting for the Bombay Army, and which restrict the number of recruits raised from districts beyond the Presidency limits, have lately been enforced with a degree of stringency hitherto unknown. The consequence of this stricter application of the regulation is, that a greater competition takes place for recruits offering from one locality. In the language of political economy the area of production has been narrowed, with the usual result of lowering the quality, and enhancing the cost, of the raw material. The Hindustan recruits are generally fine, well-built men, temperate and frugal in their habits, and clean in their persons. They are remarkable for their martial bearing, and strong feelings of pride and military honour. The Punjabees, too, in general make very good soldiers; but the men of the finest physique and most independent bearing, and who, in my opinion, possess military qualities of the very highest order, are those recruited in Afghanistan and amongst the hill tribes beyond the frontier. The Mahrattas, at all events those now enlisted, are generally weak and under-sized, and feebly developed about the chest and limbs. They are, however, said to be brave, hardy, enduring, and patient of fatigue, hard labour, and privation. Commanding Officers in general bear testimony to the good qualities of the Mahratta sepoy, but it must be confessed he is in physique inferior to the men from Oude and the North-West. I am informed that it is now very difficult to procure recruits amongst the true Mahrattas of the Deccan, and it is admitted that the Konkan furnishes a class of recruits in every way inferior.

My own impression of the latter is, that they are less imbued with the military spirit than their comrades from the other side of India, and that they are too much disposed to exaggerate trifling injuries and slight ailments in order to gain admission into hospital.

Treatment of Disease when special.

28. Little was done in this regard during the past year. A regimental native hospital offers, it must be confessed, but a limited sphere for the practice of special treatment. Cases are in general too few, and the means at disposal too limited, to allow of any useful lessons to be learned from special practice.

In compliance with instructions received from the office of the Surgeon-General, a series of experiments are now being made with the view of determining the comparative merits of quinine and cinchonidine as a mode of treatment in intermittent fever. A report on the subject shall be forwarded when sufficient time has elapsed to enable a judgment to be formed on the results yielded by the present experiments.

Another movement worthy of note in the direction of special treatment, during the past year, was the extension given to the antiseptic treatment of wounds and ulcers. Several cases of foul ulcers and sloughing buboes, lately under treatment, afforded an excellent opportunity for forming a judgment on the merits of this system, and the results have been in every case satisfactory. The following is the method adopted :—

In the case of buboes, for instance, which burrow beneath the surface and undermine the skin, these are first freely laid open in every direction, so as to allow of no pockets or honey-combing of the surface. The wound is then freely syringed with a solution of carbolic acid, 1 to 40; after which the surface is carefully packed with several layers of soft cotton wool steeped in carbolic oil of a strength of 1 to 30 or 40, as may be thought necessary, and the edges of the sore carefully wiped with a piece of cotton steeped in carbolized glycerine. This part of the treatment is considered of importance, as on its careful performance the process of healing in a great measure depends. A piece of lint in two or three folds, and steeped in carbolic oil, is then laid over the cotton-packing, and the whole covered with a piece of oiled silk, and secured with a strip of adhesive plaster. In drawing attention to this system of treatment it ought to be here stated that in practice three antiseptic agents may be relied on, viz., carbolic acid, boracic acid, and chloride of zinc, all of which possess peculiar properties which render their employment advisable under different circumstances. The first is volatile, and is useful where a cavity exists; any air entering being deprived of its septic influence by the vapour of carbolic acid. Boracic acid may be employed either as a lotion or a dry dressing. It is much more soluble in hot than in cold water; and a piece of lint dipped in a saturated boiling solution is immediately covered on cooling with a deposit of crystals of the acid. Its special advantage is its extreme blandness, but its non-volatility renders it useful only in superficial sores. Chloride of zinc is also, like boracic acid, non-volatile, but as it is a powerful caustic, its use is limited to a certain number of cases. It may be used in the proportion of 40 grains to an ounce of water as an application to the surface of sloughing wounds.

The great success obtained in Germany and Belgium by the hydrotherapeutic, or so-called "water-cure," treatment of typhoid fever and the exanthemata, and the favourable opinions expressed by the highest authorities on the subject in England, induced me to make a few tentative trials of the system in a very modified way.

A few cases having been admitted of remittent fever, characterized by excessively high temperature and other typhoid symptoms forming indications for the cold-water treatment, gave me the desired opportunity, and the patients were accordingly by my directions well sponged with cold water from four to six times a day according to circumstances. In every instance the results were of a nature to induce me to adopt a bolder method of treatment on future occasions. I have seen the temperature of the body repeatedly lowered from 103° and 104° F. to below 100°, and the patient placed in a state of comparative ease and comfort after one or two affusions; and if the means existed, and a suitable bathing apparatus were provided, I should not hesitate to employ the bath for ten minutes at a temperature of 68° F. as recommended by Liebermeister, who advises a repetition of the treatment as often as the temperature rises to 102°, and who states he has given as many as six or seven baths within the twenty-four hours.

Much has been written of late, both on the Continent and in England, on the subject of the cold-water treatment of pyrexia. Dr. Lambert, of Brussels, in a well-considered treatise sets forth the arguments in its favour, of which the following is a condensed summary :—

It is especially useful in typhoid fever and in the exanthemata.

It acts on the principal and most constant symptoms of the disease—elevation of temperature—being thus distinctly a pyretic.

It favours the re-establishment of full and regular respiration.

It increases by reflex action the peripheral circulation.

It increases all the physiological secretions, and renders the skin soft, moist, and cool.

It generally favours the appearance of the rash, and re-establishes it if it has disappeared.

It quiets cerebral excitement by stimulating the circulation of the brain, and thus diminishes delirium, coma, and prostration.

It produces tranquility, and allows the patient to sleep.

It diminishes the frequency of the pulse by from 8 to 30 pulsations.

It cures the headache.

Its antipyretic action lasts from one to two hours.

Affusions should be repeated from two to four hours every day.

It is especially indicated in severe typhoid and malignant forms of eruptive fevers.

It does not shorten the duration of fevers, but diminishes their gravity, and renders them milder.

It is not indicated in every case of typhoid or eruptive fever, and must not be regarded as an exclusive measure.

It can be advantageously employed either by cold envelopment of the trunk, or by cold affusion.

It is easy of application, and not disagreeable to patients.

Its employment is rational, and based on the teachings of clinical physiology.

Special Observations.

29. The only remarks I feel called upon to make under this head relate to the rules in force at this station in regard to the prevention of the spread of contagious diseases.

These rules were passed by His Excellency the Governor in Council under Clause 7, Section XI., of Act III. of 1867. They provide for the establishment and maintenance of a lock-hospital; and for the registration, inspection, and periodical examination of public prostitutes. The lock-hospital, which is used for the purposes of inspection as well as treatment, is under the superintendence of the Staff Surgeon; and the Cantonment Magistrate is authorized to grant licenses to such prostitutes as are certified to be free from disease.

It is difficult to say how much good, if any, is effected in the matter of checking the spread of specific disease at this station by the regulations under Act III. Judging from the frequency of such disease amongst the troops quartered here, I should feel disposed to say that the amount of practical benefit resulting from the attempt to apply the Act to this cantonment is very small. It is not, however, fair to infer that regulations on the subject of contagious disease must in every case fail to effect their object; such a statement would be opposed, not only to the teachings of sanitary science, but also to common sense and the results of experience; but, in order to make such rules effective, they must be stringently and even severely enforced, and such, I am bound to say, is not the practice at Poona. In point of fact the system is altogether carried out here in a languid, feeble, and irregular manner; the rules regarding inspection and registration are evaded, or only observed in a very perfunctory manner; and the clause which provides that "any prostitute who shall be convicted of a breach of any of the rules shall be liable to a fine not exceeding 50 rupees, or imprisonment for eight days with or without hard labour," is, practically speaking, never enforced.

Instruction.

30. The 2nd Hospital Assistant having been for the greater part of the year absent on famine duty in Bengal, and the only medical pupil attached to the hospital being unavoidably absent every morning in attendance at ball-practice, no formal instruction beyond the ordinary clinical teaching was given during the past year.

Arrangements, however, are being made for giving two lectures a week in surgical anatomy and practice of medicine during the cold weather and rains of the current year.

H. M.'s 17th Regiment N. I.

Poona.—In medical charge of Surgeon-Major Straker; Strength, 579.

Location and Movements of Corps.

This regiment has been stationed for the year at Poona.

Detachments.

2. Some detachments, however, have been out on duty, both on and below the Ghâts, at Kharkála, Karjat, Sháhápur, Murbád, Kalyán, Bhiwandi, and Bassein.

Topography and Physical Geography.

3. Poona is situated about 43 miles from the edge of the great plateau which at the Ghâts sinks into the Konkan, and whose mean elevation is about 2,000 feet *above* the sea level.

The Soil. This is composed chiefly of trap-rock, which crops up to the surface universally interspersed with tracts of a rich, dark soil known as black soil. Small detached hills are dotted about on the northern and eastern sides of the station; from east to west on its southern side, distant about ten miles, is a continuous range of hills of about 1,500 to 1,800 feet in height, ending almost abruptly at their highest point to the south-west, where the hill-fort of Sinhgarh is placed, having an elevation of about 2,500 feet, which is equal to that of Mahableshwar. To the west and north-west an almost open plain extends for nearly fifteen or twenty miles.

No Forests nor Timber. There are no forests, and very little timber within many miles of the station.

Rivers. Two small rivers running from north-west (the Mula) and south-west (the Mutha) meet at the north-eastern point of the station and flow eastward as the Mutha-Mula, forming the northern boundary of the station though at a distance of nearly two miles from that part of it to which this report has special reference.

Water-courses. Small water-courses running at right angles to these rivers carry into them the surface water of the rainy season, and they are then swelled to a considerable size, the bed of the Mutha-Mula being about 550 feet in breadth.

Water. The water now supplied to the greater part of the cantonment, as well as to a large part of the city, is from the Kharakwásla dam, which by a canal of about seven miles brings into Poona from the valley of that name to the south-east a supply of clear good water, and of almost unlimited quantity. The value of this change from the old source of polluted tanks, or, still worse, system of diluted sewage as pumped up from the river *below* the entrance of all its filth, can scarcely be estimated too highly, and cannot but lead to a certain, though perhaps slowly operating, improvement in the public health: the only possible disadvantage in this new water-supply may arise from the chance of pollution by the way, as the canal is an open one.

Quality of Water.—Analysis. The quality of this water is, as the Chemical Analyser states, fit for drinking purposes, though the specimen I sent down for analysis happened not to be so clean as usual, some slight disturbance of a part of the bed of the lake having given it for the time a slightly yellow colour.

Drainage. With the exception of the water-courses above mentioned, into which all the surface water runs very quickly after it has fallen, there is no special drainage from any part of the cantonment; in the city I believe there are some drains, though not of any great extent.

Effects on Climate. 4. Whether the formation of this lake is extensive enough to make any perceptible change in the climate of this place I cannot say. It is too far south, and not enough westward to affect the prevailing south-west breezes.

Temperature. The mean temperature, as far as I can collect it from the various reports of the last ten years published by the sanitary commissions and sanitary officers, is about 77° for the whole year.

The mean of maxima about 86°.
Do. minima do. 68°.
The mean range do. 18°.

Barometric Reading—Rain-fall. The mean atmospheric pressure is 27·907, and the usual rain-fall is about 25 inches.

East Wind on some Diseases. The prevailing winds for the greater part of the year, namely from February to September, are westerly and south-westerly. For the other four months the wind blows with much persistency from the eastward, and but for this cause the climate might be pronounced very good indeed; for it is doubtless to some subtly malign influence of this wind as well as to the extreme dryness of both the cold and hot season that very much of disease is due, affecting, as it does so notably, all the great secreting organs of the body, primarily the skin, and then, secondarily, by means of its effect on the skin, (as well as by some influence of its own,) the lungs, liver, kidneys, and even the great mucous tract of the alimentary canal.

Lines. 5. The lines of the sepoys occupy a space of about 160,683 square yards, almost in the centre of the station, though a little to the west of a median line drawn from north to south. They are bounded on the east by the general parade ground, an open plain extending for a mile towards the Wanowri lines, so that ventilation on that side is perfect; on the west by another, though much smaller, open space, traversed by a water-course running from south to north, the chief

outlet of the surface drainage from the lines; on the north what has been the during the year another open space extending to the Ghorpuri Barracks, but where now, in close proximity to ours, the new lines of the 8th Native Infantry Regiment are being erected; on the south, at a more proper distance of about a hundred yards, are the lines of the 1st Grenadier Regiment N. I. So that the ventilation may be said to be excellent, though it will be slightly impeded by the proximity of the new lines, which, in my opinion, should not have been brought so close to our flank.

The huts are in four rows, running east and west, with their doors looking north and south; each row is divided into 8 blocks, each block containing 22 huts, back to back, eleven on each side, with a common partition wall. Each hut is built of unburnt brick, with a sloping roof and a partition wall. Its dimensions are 10 feet in height (back wall) by 9 in length and 7 in breadth, and the front wall 8 feet high, so that its superficial area is 81 feet and its cubic space 810.

The corner huts, of which there are 16 (two for each company), are occupied by havildars and naiques, and are rather larger, viz. 9 feet by 12 feet by 13 feet, or in area 105 superficial feet; their cubic space 1,404 square feet. The average number of occupants of these has been about 55, inclusive of women and children: so the average superficial area for each occupant for the year has been about 30 feet, and the cubic space about 408 cubic feet.

Average Number of Occupants.

The total cubic space of the men's huts is 741,312 cubic feet and the area 57,024 square feet. The average number occupying these for the year has been 1,153: so the cubic space for each individual has been about 634 cubic feet and the area about 50 square feet—about half the number, it must be remembered, being children. This allowance of space is, however, only true in a general way; for I have noticed that in the monthly register, which has been supplied to me by the Quarter Master during the last three months of the year, that ten or twelve huts per company are generally empty, while in others are 3 or 4 occupants, with 5 or 6 children.

Total Cubic Space and Area of Sepoys' Huts.

Average Space for each Occupant including Women and Children.

This is, however, exceptional, and the usual number is 2 with perhaps 3 children. So that, speaking generally, it cannot be said that the lines are over-crowded if the register is correct, though doubtless in individual cases, when the sepoy has his friends staying with him (though they do not seem to do so for any long period) certain huts are over-filled.

Usually only 2 in each Hut, and perhaps 3 Children.

Bazaar.

The huts of the regimental bazaar are in rear of the men's lines, are well ventilated, and are in a fairly good state of repair.

There are no villages at all near the lines, the nearest being that behind the Wanowri Lines, which must be a mile and a half off in an easterly direction.

Neighbouring Villages.

As above stated there is nothing but a natural drainage from the slope of the soil, which is downwards to a water-course to the rear, or west of the lines, and which from the rocky nature of the ground is very effective and quickly carries off the rain-fall, leaving very little, if any, stagnant water near the huts.

Drainage.

No Tanks.

No tanks at all are used since the Kharakwásla water has been laid on.

6. The conservancy system is what the concurrent testimony of most writers on the subject and, I believe, the larger majority of medical men now consider to be a very objectionable one, namely pans into which the solid as far as they can be kept separated from the fluid excreta are received, whence both are collected and emptied into carts twice a day, and taken to a distance of about two miles and thrown into trenches dug for the purpose, each layer being covered in with a layer of earth, dry as long as the dry season lasts, and the whole contents of which trenches are periodically carried away and used for manure. I need not waste time and space here by entering into any lengthy and elaborate argument to show why this system is so objectionable, especially as there is now a large amount of printed matter on the subject available to those anxious to study it, in which the whole question has been discussed at much length; among which I would recommend specially a book on the "Utilization of Sewage" by Dr. Corfield, Professor of Hygiene at University College Hospital, which contains a very clear and impartial statement of the whole subject. But I may briefly indicate the two chief reasons for which this system is to be condemned. The first is, that all hand labour of this kind requires the most constant, never-ending, continuous supervision

Conservancy and Sanitary Arrangements.

Chief Objections to present System of Conservancy

to see that it is even fairly well done; and I need hardly say that this is not obtainable in India, if it is even in any country, which is doubtful. It is also all but impossible to get that thorough cleanliness which is needed, and quite impossible to have it immediately after each deposit, which is very important. The second great reason is the nuisance that arises from the open removal of the excreta, not only as manifested near and around the latrines, but along the whole track taken by the cart in its journey to the trenches. Theoretically this is supposed to be done in the dead of night when no one is near to be sickened by the thick, horrid, slowly-dissipating, and not easily forgotten odour which leaves its trail so far behind; but, as we all know, practically this is not the case, and never can be, for however early the work is begun it cannot be finished by sun-rise.

The Remedy.

To show that I am not thus dilating on an unsavoury subject without a purpose, I have brought it into such prominence because there is a remedy for it all, to which I would beg leave to call most particular attention—because though I believe it cannot but be adopted before very long, I would expedite it by all the means in my power.

Mr. Whiting's Scheme.

Water-power and Utilization of the Sewage.

This is the scheme proposed by Mr. Whiting, the Irrigation Engineer, who has, I believe laid it before Government, or is about to do so. His object is to utilize the large store of water which is now available, by laying it on to each latrine in such a manner as to carry off at once, the whole of the solid and fluid excreta in closed pipes to a field about two miles off near the banks of the river, where they could be made remunerative by being used for manure. This plan, as far as I am able to judge of it with my present knowledge of all the circumstances, appears to me so perfectly simple and feasible, will at once remedy all the evils I have attempted to describe, possesses such advantages of its own with a minimum of disadvantages, that I would most earnestly urge its early consideration and immediate adoption, if it is found to possess the merits claimed for it by its able proposer, one of the chief of which, its economy, must make it of the utmost importance to Government, for it will not only reduce expenditure by reduction in the number of sweepers, but eventually be remunerative by its fertilizing powers. Mr. Whiting anticipates a profit of Rs. 40,000 instead of an expenditure of Rs. 1,200, which the present plan I believe costs.

Not only an economy, but remunerative.

Approval by the Sanitary Commissioner.

Dr. Lumsdaine has, I believe, expressed his entire approval of it to Mr. Whiting; and, judging from all the published accounts I have read, it appears to me that all the highest authorities in England are coming to agree that it is not alone the best but the only method of disposing of sewage.

Sanitary and Conservancy Arrangements in the Lines.

One sweeper per company is employed in keeping the ground between the lines of huts clean, and the *debris* is carted off in a similar way to the sewage.

Water-supply to Lines.

7. As the men now use the Kharakwásla water entirely (and I believe highly approve of it in all ranks) the account given above of its quantity and quality will suffice. I need only add here that it is supplied to the lines by three stand-pipes emptying into three good-sized reservoirs of masonry, at the south-west end of the huts, in unlimited quantity, the wastage, of which from their ablutions there is a great deal going to the men's gardens, which are close by.

No Suggestions, except to prevent pollution of Canal.

As it is almost all that can be desired, no suggestions have been necessary, with the single exception, slightly adverted to above, of urging on the irrigation authorities, which I have done privately, the great importance of preventing defilement of the water by the villagers on its way into Poona by the open canal.

Food.

8. It is not easy to supervise what is eaten by the sepoy in his hut; but, as far as one can tell, the food grains of the Poona Market are good and fairly cheap, though for a man with a large family it appears not quite an easy matter to get a sufficiency of food. To this, at least, I must attribute a considerable share in causing admissions to hospital from boils, ulcers, and other such affections.

Kinds of Food—nitrogenous.

The foods chiefly eaten are wheat flour, bajri, dhall, rice, prepared with many condiments of the hottest kind. The Mahrattas and lower castes of Hindus eat fish and meat; eggs some of them eat. Milk is not drunk, apparently, chiefly on account of its cost.

Hydro-Carbons.

In the above the nitrogenous compounds are taken; the supply of hydro-carbons is very effectively maintained by the amount of ghee or clarified butter, and oil, as in cocoanut, which is mixed with nearly all they eat.

Spirit, I think, is not much indulged in, and opium-eating, at least to any deleterious or even appreciable extent, is not common. Smoking is, of course, universal; and, if one may judge from its odour, the leaf is of the very worst kind of tobacco.

Clothing quite unsuitable in any way, but especially the Boots.

9. The clothing is, I am sorry to say, the same as that I have always privately and often in my reports for the last ten years ventured to protest against, viz., the British tunic and trousers, and, worst of all, the hard leather boots. I can scarcely conceive it possible that anything could have been invented more utterly unsuited to the sepoy's work, habits, mode of life, or even appearance.

The Dress of the Belooch Regiments cited; also that of the Punjab Regiments.

Nor can it be from any inexperience of any other dress, for there are the Belooch regiments, or, what is still better, the dress of the Punjab Native Infantry; I mean that which they wore in Abyssinia, and which I believe they also wear in quarters. Some such dress, or a cross between them, I would respectfully urge on the notice of the authorities, or one more closely resembling that of the Zouave. Even if it is thought necessary to keep to the scarlet, at least let the fashion of the tunic be altogether changed, and, above all, as a really important sanitary change, let the ridiculous trousers be discarded, and the terribly bad, cruel, and ill-made, ill-fitting invention called the ammunition-boot be done away with for ever.

Boots.

If laced-up shooting boots, of good pliant English leather, could be supplied to the men, and if they could be made always to wear socks inside them, these boots would be preferable; but till that can be done I submit that nothing is so suitable as the native sandal.

Duties and their Effect on Health.

10. The duties have been the usual parades, guards, and ball-practice, with some out-post duties of rather an exceptional kind, as they were continued through the rains, and were, therefore, the cause of a few extra cases of fever. This was, I believe, necessitated by the fact that the police of this and the Tanna District, who usually guard the treasuries, were employed in trying to catch a troop of bandits infesting those districts, and the guard duties had to be taken by our detachments throughout the rains, and even up to date, for the capture has not been effected, and our men are still employed. The heavy rains of the season, especially at places like Karjat, where the fall was more than 120 inches, had of course the principal share in producing sickness. Another very probable cause of sickness is the long duration of the musketry parades, occurring, as they do, from 5 A.M. before sun-rise, when the temperature and vital power are at their minima, and extending over six hours, during which the stomach is empty, and no food-forces are at work, and finishing often at 11 o'clock, with a long march back under a pretty powerful sun, the temperature during the period having almost completed its diurnal range. I have not been able as yet (and it is to go on, I believe, for some time longer) to trace any actual case of illness to this practice; and in the absence of any such proof the argument from probability would not, I fear, have much weight, and I have, therefore, contented myself with pointing out in the monthly sanitary report the chances of evil results, and have not more specially pressed the matter. No change has been made, and I am given to understand that from the nature of the work it is an unavoidable necessity.

Exercise, Amusement, and Occupation.

11. Parades and guards are the chief exercise the men get. Their amusements, I fancy, are the time-honoured, unchanging monotony of the tom-tom for the ear and the nautch for the eye.

Gymnasium.

There was a gymnasium, but it has been dismantled, and the men cannot use it now.

Lock-up Rooms and Cells.

12. No cells are used. Prisoners are kept in the quarter-guard when under sentence of confinement.

Marches.

13. There have been no marches during the year.

Hospital

14. The hospital is a fairly well-built building, facing north, erected on a plinth of about 3 feet, containing one large ward, 96 feet in length by 22 feet in breadth and about 17 feet high to the level of the outer walls, the central ridge being about 7 feet higher. On three sides of this a verandah extends, the fourth side being taken up for the offices. The north wall of this ward is pierced with two doors and seven windows, the latter being of good size and glazed; each end wall has

two windows of the same size; and the south wall has only one door leading into the dispensary. Thus, though there are not opposite windows except in the length of the ward, the ventilation is good.

Ventilation.

Mud Floor.

The roof is a thatched one. The great defect is the floor, which is a mud one, a most objectionable thing in a hospital.

Bath-room.

There is no proper bath-room, such as have been sanctioned in G. O. C. No. 157 of 11th March 1874.

The only place it is possible to use for a dead-house is one of the corner rooms of the back verandah, which is more properly a store-room. There should be a proper dead-house separated from the rest of the building.

Dead-house.

A separate building, similarly built on an equally raised plinth, and placed at right angles to the western end of the larger building, contains two smaller wards, adapted for special cases such as ophthalmic disorders, or for women when these are so ill as to seek hospital aid. The windows of these are not so large, nor are they glazed; hence the ventilation is not so good. This building is tiled, has a similar verandah to the other, and is divided into two wards—one 25 feet by 22 by 11·6, the other 13 feet by 22 by 11·6. The whole cubic capacity and area of the three wards stands thus: —

Separate Wards.

Cubic Capacity of the three Wards.

Large ward, superficial area 2,112 square feet.
Do. cubic space 50,688 cubic feet.

1 separate ward, 550 square feet.
Do. 6,325 cubic feet.

2 separate wards, superficial area 286 square feet.
Do. cubic space 3,289 cubic feet.

The whole, therefore, gives a cubic capacity of 60,302 cubic feet and an area of 2,948 square feet. This gives, at the rate of about 2,000 cubic feet and 100 square feet per man, space for 30 patients in all, or about 25 in the large ward, 3 in the larger separate ward, 2 in the smaller separate ward.

Cubic Space and Superficial.

Over-crowding.

16. There was, therefore, no over-crowding during the year.

17. *a*.—No improvements have been made, except the very minor ones of raising the compound wall to a level of four feet, and removing the rain-guage-stand to a more open spot.

Improvements.

Defects.

b.—The requirements are, as already mentioned, a dead-house, a proper bath-room, and a stone floor.

Recommendations.

The only recomendations made were for a better floor; the other changes having, I believe, been mentioned formerly.

The compound is of good size; the guard-room and subordinates' quarters sufficiently good and in fair order.

The latrines are not good, the floors not being stone, and there being no arrangement to keep the solid excreta from the urine, so that the difficulty of keeping the place clean and free from odour is very great. All that I have urged above against the line latrines would, of course, be of double force against those of a hospital; and it is only because I believe the water-system must soon be applied that I have not made frequent complaints of the present condition of things.

Latrines.

19. The only conservancy establishment proper is two sweepers, who collect the excreta and put them in a cart which comes from the lines to convey them away.

Conservancy.

19. The water-supply is, I regret to say, still from a well in the neighbourhood, into which, however, a pipe flows with the canal water. In July application was made for the canal or Kharakwásla water to be laid on in the hospital compound. The supply pipe goes through the hospital compound; a special application had to be made. When this was done a committee was assembled to consider what saving could be effected by a discharge of bheesties if the water were supplied. This was done, and the report duly sent in, advising that, for the present, only one bheestie should be discharged in each hospital; but even this would be a saving, taking all the native hospitals, of Rs. 35 a month. There the matter has remained, however, up to the present.

Water-supply.

Application for Kharakwásla Water made in last July.

The delay is, however, I am given to understand, only accidental on account of some misunderstanding as to sending in estimates for the work, which I trust will very soon be put right, and the work done.

Cause of the delay.

20. The amount of sickness, to judge by the daily average of sick, is less than last year, viz. 18·7 to 19·9; but the daily average precentage to average strength has been greater, viz. 3·2 to 2·8.

Sickness.

Strength decreased.

The average strength meanwhile shows a decrease from 690 to 579.

Percentage of Admissions to Average Strength.

The ratio percentage of admissions to average strength shows considerable decrease, 87·0 to 109·4.

The following table will show in a concise way the comparison between this year and 1873 in strength and in sickness :—

Table of Comparative Strength and Admissions according to Caste.

Years	Average Daily Sick.	Average Daily Strength per Cent. during year.	Admitted during year.	Died in Hospital.	Died out of Hospital.	Christians.				Hindus.		Mussulmans.		Jews.	
						Europeans.		Natives.							
						Strength.	Admissions.	Strength.	Admissions.	Strength.	Admissions.	Strength.	Admissions.	Strength.	Admissions.
1873...	19·9	690	755	1	1	6	6	7	7	648	689	37	56	3	3
1874...	18·7	579	506	5	3	7	6	8	2	644	467	37	34	3	3

The following table shows the mortality for the year; its ratio to strength, according to caste, as compared to last year :—

	Christians.				Hindus.		Mussulmans.		Jews.		Total.	
	Europeans.		Natives.									
	Strength.	Ratio of Deaths to Strength per Cent.	Strength.	Ratio of Deaths to Strength per Cent.	Strength.	Ratio of Deaths to Strength per Cent.	Strength.	Ratio of Deaths to Strength per Cent.	Strength.	Ratio of Deaths to Strength per Cent.	Strength.	Ratio of Deaths to Strength per Cent.
1873	6	...	7	...	648	0·1	37	...	3	...	701	0·1
1874	7	...	8	...	644	0·7	37	...	3	...	699	0·7

The number invalided during the year as compared to 1873 is shown in the next table :—

	Hindus.		Mussulmans.		Jews.	
	Strength.	Invalided.	Strength.	Invalided.	Strength.	Invalided.
1873	648	17	37	2	3	...
1874	644	19	37	2	3	...

Principal Causes of Sickness.

21. The principal causes of sickness will be best seen if I give here in a tabular form the amount of sickness in each sub-division :—

General Diseases.

Sub-Division A.

Eruptive fevers...	5	
Continued do	1	
Ague	201	
Total——		207

Sub-Division B.

Chronic rheumatism	28	
Syphilis, primary	7	
„ secondary	6	
Irritable tumour	1	
Total... —		42
Total of General Diseases ...		249

Diseases of the digestive system ...	57	
Injuries	50	
Disease of the respiratory system ...	46	
„ „ cutaneous „ ...	41	
„ „ cellular „ ...	13	
„ „ eye ...	13	
„ „ circulatory „ ...	12	
Cases of debility	8	
Diseases of the nervous system ...	6	
„ urinary organs	5	
„ organs of locomotion ...	4	
„ „ generation ...	1	
„ the absorbent system ...	1	
Total ... —		257
Grand Total...		506

From this it will be seen that out of the total admissions for the year, amounting to 506, what are termed in the book of nomenclature "general diseases" furnished nearly half, and of this Sub-Division A., or the fevers, contribute 207, from which, if we exclude the few cases of eruptive and continued fever, malaria is seen to be the cause of the largest amount of disease, viz., 201 cases of malarial fever.

Injuries.

The next largest figure is in the column of injuries, and the great cause of this is, I believe, the ammunition boot, of which I have above ventured to give my opinion; and, if I am right, it is a cause which can and ought to be done away with, and this class of diseases almost entirely prevented.

Diseases of Digestive System. 1 Death.

The next largest are diseases of the stomach and intestines, of which there were 50 admissions. None of these have been very serious cases since I have taken charge, but one death from dysentery occurred in February, and several cases are noticed in the monthly remarks for April and June.

Diseases of Respiratory System. 2 Deaths from Pneumonia.

Diseases of the lungs furnish the next highest number, being 46. The worst of these, as I gather from the monthly records, were cases of pneumonia, one of which was fatal in January, another in March, and other cases are remarked on.

Sub-Division B.—Rheumatism, Syphilis.

Sub-Division B. of the general diseases column, consisting of rheumatism, syphilis, and other diseases of this class, shows the next highest number, namely 44. Of these, rheumatism gives 20, syphilis 15, and other diseases of this class 9.

Rheumatism.

Of rheumatic cases I think it may be safely said, almost as an axiom, that three-fourths of them are malingering and the rest syphilitic. The native learns, very soon after enlistment, that when he wishes to escape parade, or evade duty, a gentle lumbago, or any other form of slight rheumatism, is the most easily simulated of all disorders, and the least possible to be sworn to as malingering.

Efforts to be invalided.

The experienced malingerer also knows that the greater number of admissions that can be shown opposite his name, the greater chance he has of being invalided when he goes up before the annual committee for that purpose: so that, directly fifteen years' service is completed, the period which must be served before he can be invalided, rheumatic symptoms become very frequent and very severe.

Skin Diseases.

Skin diseases and "other diseases of this class" have contributed 44 admissions. These have been chiefly scabies. One case in this class has been noteworthy, as he has been under treatment for a long time without any effect whatever; and though he has been more than once discharged as fit for duty, he returns with a persistent declaration that he is unable to wear his uniform on account of a burning sensation in the skin, which merely shows patches of discolouration without any eruption or thickening whatever. He also alleged that there was diminished sensibility of the discoloured portions. After testing this and finding it to be false, and after treating him for months with the usual medicines—such as liquor potassæ in large doses, liquor arsenicalis continued for a long time, and the liquor arsenici et hydrargyri hydriodatis—without the least effect, I at last finally dismissed him with a promise of a court-martial if he returned.

One special case of simple Discolouration.

Treatment.

No effect.

Diseases of Cellular System or Abscesses.
Diseases of Circulatory System.
Eye.

Next in numerical ratio are diseases of cellular system or abscesses 15, diseases of the circulatory system 13, and of the eye 13.

The abscesses are, I believe, partly due to insufficient or bad food, as I have mentioned already.

One serious case of Heart Disease invalided.

Only one case of actual heart disease has come under my own observation, and he has been invalided.

The eye diseases are the ordinary cases of conjunctivitis to which natives are liable.

The rest of the list scarcely requires comment. The cases of gonorrhœa are notably few; but this, I believe, is because the sepoy treats himself, or gets treated by the native practitioner for that disorder, rather than come to hospital and confess to such an ailment. Even when attacked with syphilis he generally conceals it until he can scarcely stand, and is quite unfit for duty; and then, and not till then, does he apply for admission to hospital.

Reasons why admissions from Gonorrhœa so few.

Some reasons why Syphilis seems not to be prevalent.

Mortality.

The deaths both in and out of hospital have been larger than the usual proportion. Three occurred before I rejoined, 2 of which were from pneumonia and 1 from dysentery. Since I came there have been 2 deaths. One was a subedar, who was suddenly stricken with hemiplegia of the right side, the result of hœmorrhage in the right cerebral hemisphere. The other was a subedar who belonged to the 26th Regiment at Surat, had been invalided in Bombay, and had come here to live with his brother, who is one of my hospital subordinates. He was very ill when he came, principally from a long-standing affection of the larynx, probably syphilitic. To this were added bronchitis and fever, and very bad nursing by his relatives, and he died in a week.

Mortality according to Race.

The following table shows the mortality according to race:—

Race.	In Hospital.	Out of Hospital.	Total.
Christians	...	...	...
Hindus	5 *	3	8
Mussulmans	...	...	...
Jews	...	...	...

* Dr. Straker would appear to have included the death of a pensioned subedar of another regiment.

Influence of Rain-fall.

24. The influence of rain-fall is shown in the larger number of cases of fever, catarrh, and dysentery admitted for July, August, and September.

Epidemics.

25. There has been no epidemic whatever.

Vaccination and Revaccination.

26. Vaccination and revaccination have been carried on as assiduously as possible, the numbers being 140 and 60 respectively. Most of the failures, which have not been few since I came, I attribute to the want of dexterity in the hospital subordinates.

General Health.

27. Looking at the regiment generally, the health of the men is good, and their physique very fair; though, as I have above stated, I do not think they all feed as well as they ought.

Special Treatment of Disease.

28. There has been no special treatment of disease worthy of being noted. I invariably administer mercury for syphilis, (especially in the form of baths,) when there is the least suspicion of its being constitutional.

Hypodermic Injection of Quinine.

I have not carried out the practice of giving quinine hypodermically, as I did in the Sappers and Miners, for various reasons: partly because I only took charge of the hospital in July—partly because the subordinates I had, were neither so intelligent, skilful, nor trustworthy as this system necessitates.

Sulphate of Cinchonidine.

The action of the sulphate of cinchonidine supplied in August has not been, as far as my experience goes, at all satisfactory. Even with much larger doses of it than of quinine the attacks do not yield so readily, and a relapse is more likely to occur. In several cases I have been obliged, for the above reasons, to discontinue it and have recourse to quinine. I would not wish, however, to speak very positively about it until I have had a longer trial. I should also wish to watch its hypodermic effects, if I can get a solution of it which will not produce ulceration.

Special Observations.

29. The only special observations I have to make are:—

System of Enlisment and Pension.

1st.—With regard to the present system of enlistment and pension, the evils of which are so forcibly pointed out in last year's reports by Surgeons-Major Dick and Sexton, and remarked on in his summary by the Surgeon-General himself, I can only add my testimony to the truth of the statements made by those officers with regard to the effects on malingering which the present system produces, and join my earnest hopes that it may soon be altered. The regimental Medical Officer cannot but look forward with horror and almost despair to the invaliding season as it comes annually round, and destroying altogether the relations of physician and patient (unsatisfactory enough at all times among natives) converts him into a detective.

Education.

2nd.—The other subject I would here venture to bring forward as worthy of some effort at improvement is the education of medical subordinates, and a more efficient selection of men of intelligence, and a greater sense of their duties and responsibilities. I do not think I am singular in my experience of this class; for, as far as I can see in most of the other regimental hospitals at this station, they do not appear to be very much better; but certainly, for the last few months, I have had very great trouble in getting the work of my own hospital efficiently performed. Mistakes of all kinds have been of daily occurrence, which were the result, not merely of extreme carelessness and slovenliness of habit, but showed such a want of knowledge of the first principles of their duty, and such ignorance of the simplest English, while they seemed so unaware of the necessity for obeying orders, that I was forced at last to report my 1st Hospital Assistant.

Report on Medical Subordinates of the Hospital for last year.

Resumé.

30. This report has already, I fear, extended to such a length, and is so late in being sent in, that I will not recapitulate, except to point out that the matters to which I would call particular attention are, 1st, the present very bad system of conservancy; and, 2nd the plan of enlistment and invaliding, which surely requires a change. A (perhaps) minor subject is that of the native soldier's dress, and especially the way he is shod.

31. Endeavours have been made daily in the wards to instruct the junior subordinates in their work; but with their present very deficient knowledge of the English language, and the bad examples they have had till recently before them, I can hardly say that these efforts have been attended with much success.

Efforts to teach Medical Pupils.

Staff and Details.

POONA.—In medical charge of Surgeon-Major MENNIE; Strength, 1,023.

Poona, the capital of the Deccan, head-quarters of the Bombay Army and of the division, is situated in latitude 18° 30′ north, and longitude 73° 55′ east, at an elevation of about 1,800 feet above the level of the sea; 100 road miles from Bombay, the nearest line to the sea-coast about 70 miles, the Ghât being nearly midway between both points.

The cantonment is regulary laid out, divided into two parts, the one inhabited by the troops and the other by shopkeepers and camp followers. European troops occupy barracks at Ghorpuri and Wanowri; the Native Infantry lines more in the centre of the station. The European residents have bungalows in the civil and staff lines, neutral, petty staff, ordnance, and Native Infantry lines. These divisions of the cantonment are enclosed within an area of about four square miles. The barracks and most of the buildings have a westerly aspect, and are open to the influence of the prevailing winds; and from the ground being elevated, and having a natural slope, the drainage is good. The roads are kept in good repair, and the locality is in every respect well chosen and favourable to the health of troops. The surrounding country is barren, with comparatively little vegetation. The surface undulating, the hills are chiefly composed of trap-rock, above which in many places is found a layer of red gravel; black soil is also met with in patches. The nearest water is the Mutha-Mula River, about three-quarters of a mile to the north; it derives its name from the junction of two streams, the Mutha and the Mula, which rise near the Bhore Ghât. The city of Poona with upwards of 80,000 inhabitants is to windward of the cantonment, and is less than a mile distant. In the vicinity of the station there is no stagnant water, or works of irrigation carried on. No noxious exhalations are supposed to rise from the soil. Grain of all descriptions common to the Deccan are grown. Poona is justly a favourite station from its pleasant and invigorating climate.

The cold weather begins in November, and terminates at the end of February; at this season the nights are cold, and there is generally a heavy dew-fall. Mornings and evenings are cool; from about 10-30 A.M. to 3 P.M. a somewhat disagreeable dry easterly wind blows. The hot weather commences in March and continues to the middle of June; although hot, it is not at any time oppressive, and the nights are invariably cool. The past year the monsoon may be said to have commenced on the 2nd June, and to have terminated on the 16th October 1874.

Rain-fall.

During the past year 39 inches 27 cents. of rain were registered.

The fall of rain as registered at the Staff Hospital during the south-west monsoon was as follows:—

Months.	Total, each month.	
	Inches.	Cents.
June	9	61
July	6	46
August	4	17
September	9	
October	6	
Total...	36	

The variations of temperature between day and night, and the dryness of the atmosphere in the cold weather, predispose to congestion of the viscera, chiefly the liver; catarrh and rheumatism also prevail. During the hot season there was but little sickness: severe cases of

dysentery and diarrhœa are to be looked for, but this year comparatively few cases of intestinal derangement came under treatment. The monsoon is always pleasant and agreeable. After the first fall of rain children suffer from diarrhœa, more especially young children who have been at Mahableshwar during the hot weather. Ague in a mild form prevails at all seasons of the year. No epidemic. The general health of those under my medical charge good.

Water-supply.

The water for all purposes is procured from wells; it is good and abundant, except towards the end of the dry season, and even then only scarce. In the event of the rain-fall in the preceding year having been below the average, a few of the wells fail at that time.

There are also extensive water-works for the supply of the station, &c. &c., constructed at Kharakwásla, about 12 miles from Poona. Although water from this source is laid on to a large number of private houses and some of the public buildings, the distribution is not yet completed, but when it is, the supply will be abundant and good. Considering the comparatively small conservancy establishments allowed, and the distance the filth has to be carried, the conservancy of this large cantonment may be said to be satisfactory; but there are evidences that a more efficient conservancy of the place is necessary, and it is to be hoped that efforts will not be relaxed to carry this out, notwithstanding the indirect opposition to sanitary measures from even the more enlightened of the native community.

Lascars' Lines.

What are called the lascars' lines are in a good position. The huts built and kept in repair by the men themselves, and are their own private property. No plinth, are of mud, and chuppered. Many of the huts that are not occupied are out of repair; there is no doubt these lines should be re-built.

A number of the men live in the bazaar and city. No arrangements beyond trenches made by the men for disposal of sewage. No lock-up rooms or cells. Drainage, surface, into a nallah at the rear of the lines, which flows into the river Mutha-Mula.

No neighbouring villages, no bazaar, no tanks. Water is drawn from one well, which is excellent, and the supply abundant all the year round. Depth of sub-soil water about fourteen feet.

Latrines.

There are two open latrines, one for males and one for females. The dry-earth system is carried out, the latrines are kept clean by two sweepers, and the excreta removed in carts twice a day.

Clothing.

A serviceable cloth coat is issued once in two years to each lascar; this has been considered sufficient, and with their own clothing adapted to the climate.

Edible Supplies.

Various grains, the staple article of food with all classes of natives, are abundant, good and cheap. Beef is both as cheap and as good as can be procured at any other large station. On the other hand, mutton is somewhat scarce, and so expensive as to be out of the reach of the greater number of meat-eating natives. Poultry is reared in the station and neighbourhood. The vegetable market is well supplied. Fruit is also plentiful.

Lascars are at all stations where there is an arsenal, and a certain number of men are transferred from one station to another as their services may be required. Lascars are exempted from the performance of pickets, guard duties, &c. &c., and the work they have to perform does not exercise any unfavourable influence on their health. As a rule the lascars are a healthy body of men; they are small in stature, but well formed and strong.

Patcheries.

There are two blocks of buildings containing comfortable quarters for five families in each.

Accommodation.

Two rooms, $16 \times 12 \times 13$ feet, with small verandah-room at the back, and the necessary out-houses attached.

They are in a healthy position with a westerly aspect. Ventilation is sufficient. The patcheries are occupied by non-commissioned officers of the different departments. Warrant officers reside in private bungalows in the camp.

Hospital.

The staff hospitalis situated in a good, open, and healthy position. A new hospital was sanctioned in 1856, but the mutiny of 1857 delayed the commencement of the work. Again in August 1862 a medical committee reported on the building, when it was represented that very considerable improvements and alterations would be necessary to render it at all suitable as a hospital, but it was then resolved that the subject of the erection of another staff hospital lie over, pend-

ing the carrying out of more emergent works. The ward for native patients was formerly a pontoon shed, cubical contents 27,755, and is capable of accommodating 24 patients comfortably.

Ventilation.

From the arrangement of the doors and windows it is sufficient, but could be improved by having ventilators placed in the roof. There has been in over-crowding. Water-supply from wells is of a good wholesome quality, but it would be a great convenience to have the Kharakwásla water laid on.

The dry-earth system of conservancy is carried out in the latrine for natives; the excreta are passed into iron pans, and collected in covered iron receptacles until removed in the filth-cart twice a day.

European Male Ward

Is an ill-ventilated room, cubical contents 9,292, and is supposed to accommodate eight patients. The bath-room is an unsuitable one and without privacy, being merely a small place in the passage leading to the latrine.

European Female Ward.

Cubical contents 8,505, is a separate building with a good bath-room and necessary attached. It is well suited for the purpose for which it is intended. As nearly all warrant and non-commissioned officers and their families are treated at their quarters, the accommodation is sufficient.

The hospital has been properly lime-washed in accordance with the regulations.

Commodes with glazed pans are in use in the hospital for Europeans, a small quantity of dry earth is placed at the bottom of each pan, and, when used, a sufficient quantity of earth as thrown in so as to cover the excreta.

Natives.

Average strength of store and tent lascars 257, followers 766, total 1,023.

Although the number of admissions is above those of 1873, the diseases that presented themselves were not, as a rule, of a severe character, and readily yielded to treatment.

On the 31st December 1873, 20 patients remained in hospital, 801 admitted during the past year, making the total number treated 821; of these 797 were discharged to duty, 10 discharged otherwise, 2 died, 12 now remaining in hospital. Percentage of treated to strength 80·2, deaths to strength 0·1, deaths to treated 0·2. Of the 10 discharged "otherwise," 8 were recommended change of air, 4 after suffering from ague for some time, 2 who were in a weakly state of health after the debilitating effects of remittent fever, 1 debility, 1 an obstinate case of bronchial catarrh. Of the 2 others, 1 a commissariat camel-driver, suffering from syphilitic bubo, who left the hospital without leave, for which he was reported and afterwards dismissed from the service; the other was a case of amentia, a medical apprentice, left behind by the Medical Officer, 28th Regiment N. I. As there was but little hope of his ever sufficiently recovering to return to duty, he was discharged from the service.

The prevailing diseases have been ague, injuries, colic, constipation, brow-ague, and chronic rheumatism.

Of the 801 admitted, 604 were fighting men and 197 followers of departments.

Ague.

During the past year the cases of ague were remarkably free from thoracic or other complications, and 4 men, who were in a weakly state of health, after repeated attacks of ague, were recommended change of air, but did not leave the hospital until they were convalescent.

Remittent Fever.

There were twelve admissions, with the exception of 3 cases, in which the fever was obstinate, and reduced the patients very much; the fever was markedly less severe in its character than such cases usually are.

Chicken-pox.

There were only 2 cases in a mild form, 1 admitted in January and 1 in April.

Chronic Rheumatism,

In the month of September a number of men came to the hospital complaining of pain in various parts of the body, and stating that they could not get about without the aid of a large stick; 5 were admitted, and the others sent to their duty in September and October. Men who are anxious to appear before the annual invaliding committee think it is absolutely necessary to have pains in or about the joints before they can be recommended for pension.

Primary Syphilis.

It will be seen by the return that only one case was admitted under this head; the man stated that he contracted the disease from a non-registered woman residing in the cantonment.

Were chiefly of a catarrhal character, or excited by some atmospheric influence. These cases were segregated as much as the hospital accommodation would allow. There should be wards separated from the main building for the treatment of ophthalmia and other infectious diseases.

Conjunctivitis.

Diseases of the Digestive System.

During the past year, natives have been remarkably free from affections of the intestinal canal. Diarrhœa yielded to ordinary treatment.

Colica.

In June a lascar was admitted complaining of excruciating pain in the region of the stomach: finding that the ordinary treatment for colic gave no relief, an emetic was administered, and by its action a long round worm was ejected from the stomach through the mouth, and the patient was relieved of all uneasiness immediately.

Hanging.

The case under this head was a lascar who attempted suicide by hanging himself; but he did not succeed, as he was cut down just in time to save his life.

Contusions.

From the nature of the employment of lascars and commissariat followers they frequently meet with accidents, which accounts for the number of admissions under this head. The right hand of a camel-driver was accidentally caught in a corn-grinding machine, and his hand was much lacerated; the little finger was amputated. Carbolic acid was of great value in the treatment; for, I believe, that without its use it would have been necessary to have removed the hand.

Deaths.

Two cases proved fatal: 1, a (Hindu) lascar, was brought to hospital in an advanced stage of pneumonia, and his friends stated that he had been suffering from ague for some weeks before any symptoms of chest affection showed themselves; 2, a muleteer (Mohamedan) was brought to hospital in a dying state, and, as far as any diagnosis could be made, he was suffering from mitral disease of the heart.

Nine lascars who had served the required time for pension were invalided; they had done as much service as could have been expected of them. One head-guide of the Quarter-Master General's department who suffered from diabetes was also invalided.

Europeans.

Average strength of commissioned, warrant, and non-commissioned officers was 105. Two commissioned and 1 warrant officer proceeded to Bombay, on medical certificate, to appear before the Standing Medical Committee, with a view to obtaining a final medical certificate to Europe.

The warrant officer, a conductor in the Ordnance Department, a man of intemperate habits, and who suffered much from repeated attacks of hepatitis, died while on furlough.

Casualties.

Were 1 enteric fever, 1 apoplexy, 1 general debility, and 1 disease of the heart.

Women and Children.

The climate of Poona is undoubtedly suitable for young children.

Seven European and 1 native child were treated in March, suffering from chicken-pox in a mild form. In December measles and hooping-cough made their appearance.

Thirteen cases of midwifery attended during the year; 3 required instrumental interference

The European child that died in hospital was an eight-months' child, and only survived his birth three days.

Vaccination

Has been successfully carried on, 1,043 children being vaccinated. Of the 25 revaccinations, 22 were male adults, 1 female adult, and 2 children; of these, 17 were successful, 7 doubtful, and 1 unknown; they had all been vaccinated some years before, and the 2 children were about 9 years of age.

The medical pupils were instructed two or three times a week in arithmetic, dictation, materia medica, medicine, and surgery.

Bombay Sappers and Miners.

KIRKEE.—In medical charge of Surgeon-Major DAVEY; Strength, 397.

Location and Movements of Corps.

The head-quarters, Bombay Sappers and Miners, consisting of four companies, have been stationed at Kirkee during the year, and with the exception of a movement of two of the companies in July last to a new site on the opposite bank of the river Mula no movement has taken place.

Detachments.

A fifth company of the regiment proceeded to Aden in the beginning of 1873, and still forms part of that garrison.

Topography and Physical Geography.

Owing to the exceptional status of the regiment I must ask to defer description and details until the new site is finished and occupied. The regiment is in the act of changing its locality, and although the new site is well known to me, I am not acquainted with the number or size of the neighbouring villages or the nature of the cultivation. At present the blocks of huts erected are only sufficient to accommodate two companies, but the remaining blocks are being pushed rapidly forward, and the hospital and subsidiary buildings have just been commenced. Sites for patcheries and barracks for the European non-commissioned officers of the Sappers, and 43rd Company, Royal Engineers, have been selected and marked out, but building has not yet been commenced; the same remark applies to officers' quarters, concerning which there will, I fear, be some difficulty owing to the expense of building at Kirkee.

Effects on Climate

Not yet observed, the new site not being occupied or finished; but I may remark that the site chosen for the sepoys is in a bend or loop of the river on which they approximate, and this may tend to produce malarious fever in the autumnal months, when it is the custom to let the river empty itself, and its fœtid muddy bed is exposed.

Lines.

The lines, as already stated, are not yet completed, and no commencement has been made of the barracks and buildings for the European non-commissioned officers of Sappers and 43rd Company, Royal Engineers; all details are, therefore, postponed pending completion and occupation.

Conservancy and Sanitary Arrangements.

The old style of native privies is in use in the old lines; they are without roofs, and contrast very favourably with the neighbouring bazaar privies, which, being roofed, do not admit of volatilization; the stench is, consequently, confined and concentrated, and any near approach to these bazaar privies is always avoided by the European non-commissioned officers of the regiment when marching to parade. The filth of these privies is daily removed by carts and buried in the manure yard; all surface sweepings are removed daily from the bazaar and lines; fallen leaves and all decaying vegetable rubbish is swept up into heaps and burnt. The meat exposed for sale is inspected by the conservancy sergeant, and if suspected to be unsound is brought to the hospital and examined; if found unfit for food is condemned, and the butcher heavily fined by the Cantonment Magistrate.

Water-supply.

The old lines are supplied with the Pashan Valley water brought in iron pipes; it is abundant and of a good quality. The new lines are at present entirely dependent on the river for the supply of this needful necessary, and although the water has been pronounced on analysis to be potable, I am of opinion, that it should not be used, but that water either from the Kharakwásla or Pashan Valley should be laid on. The new lines are situated below the bazaar, and the banks of the river above the lines are frequented by dhobies, who do all their washing in it. All the clothes of the bazaar are washed here, and men and animals are constantly bathing in it—a condition which renders pollution of the water certain in the event of prevalence of epidemic disease in the bazaar.

Food.

Rice, wheat flour, dhall and ghee, with vegetables, and occasionally mutton by the flesh-eating men of the regiment, are the usual diet of the Sappers' sepoy; the river produces an abundance of fairly edible fish, which is also indulged in. The supplies during the year have been abundant and cheap.

Clothing.

The Sappers are dressed when on parade as all other native corps, but their working dress consists of a loose blue serge knickerbocker kind of costume, which in no way interferes with free movement of body or limp.

Duties and their Effect on Health.

The principal duties of the Sappers are field works, escalade, and pontoon drill; but during the year the chief duty has been line-building, which, excepting accidents while at work from abrasions and contusions from falling material and working tools, does not appear to have exercised any injurious effect on the men's health.

Exercise, Amusement, and Occupation.

There has been too much work in line-building for much amusing occupation; but the sapper when at leisure amuses himself as other native soldiers of the infantry branch of the service.

Lock-up Rooms and Cells.

There are no cells or lock-up rooms, but the guard-room is used for the confinement of prisoners.

Marches.

None have taken place during the year.

Hospital and its Surroundings.

The present building is a mere temporary structure consisting of a dispensary, two wards, cooking, washing and privy rooms. One ward holds sixteen, the other eight beds. The new hospital has just been commenced, and the want of such suitable accommodation as a dead-house, medical subordinates' quarters, which have been felt in the temporary structure, will be supplied.

Ventilation.

Free roof-ventilation, the only kind which can be imposed on the native soldier with any chance of success, is secured in the construction of the new lines.

Over-crowding.

No over-crowding during the year, and in the new lines the accommodation will be ample.

Accommodation and Defects.

No remarks can be offered until experience has shown the effect of occupancy of the new lines.

Conservancy.

Details have been given under the heading conservancy and sanitary arrangements.

Hospital Water-supply.

Water is supplied to the hospital from the Pashan Valley, supply being abundant.

Sickness, Mortality, and Invaliding.

Three hundred and fifty men have been treated in hospital during the year. One death occurred from remittent fever, the patient being a comparatively old and worn-but sepoy of 24¾ years' service. Five men were invalided, and 7 sent for change of climate.

Principal causes of Sickness.

Ague, more especially in the autumal months of the year, and injuries, such as contusions and sprains, arising from the nature of the men's work.

Principal causes of Mortality.

One death occurred from remittent fever.

Mortality according to Race.

One Hindu died.

Influence of Rain-fall.

An unusually heavy rain-fall has, no doubt, contributed to much of the fever, which has been more or less prevalent; the fever, however, has not been of a severe or complicated nature, and has generally quickly yielded to appropriate treatment.

Epidemics.

No epidemic disease has occurred.

Vaccination and Revaccination.

One hundred and twenty persons were successfully vaccinated during the year, 10 were revaccinated, and there were 4 unsuccessful operations.

General Health and Physique of the Men.

General health has been good; physique of the men generally has been good, but there are some under-sized men in the corps and others not muscular enough for a sapper's work.

Treatment of Disease when special. — No disease requiring special treatment has occurred.

Special Observations. — None are called for on account of the general good health of the corps during the year under report.

Resumé. — The year on the whole has been very favourable to the regiment, 350 cases only having come under treatment as compared with 532 treated in the previous year.

The average daily sick in 1873 was 10·9, whilst for 1874 this has been reduced to 7·9, showing a reduction of 3 per cent. The percentage of treated to strength has fallen from 136·0 for 1873 to 88·1 for 1874. Out of the total number under treatment during the year, 172 were treated, the respective numbers being ague 152, remittent fever 3, febricula 13, chicken-pox 3, and phlegmonous erysipelas 1. Acute and chronic rheumatism furnished 12, primary syphilis 1, true leprosy 1, scurvy and general dropsy 2, synovial muscular rheumatism and lumbago 7, mania 1, conjunctivitis and ostitis 5, varicose veins 2, disease of the respiratory organs 15, digestive system 22, urinary system 3, generative system 2, disease of cellular tissue and cutaneous system contributed respectevly 11 and 21 admissions, general debility 2, and injuries—all of a minor kind—71. These last are incidental to the work of a sapper, and are caused by falling material and injuries from tools whilst at work. One man was tried by court-martial for malingering, convicted, and punished; and one case of mania was transferred to the Lunatic Asylum, Colaba.

One death occurred in hospital and one out of hospital during the year.

Five men were invalided during the year, and seven were sent for change of climate.

A table of meteorological observations for the year is annexed, from which it will be observed that there were seventy-three days on which rain fell during the year, and that the fall was unusually heavy, amounting to close upon forty inches :—

Months.	Temperature.							Rain.			Wind.
	Highest in month.	Lowest in month.	Range in month.	Mean of all highest.	Mean of all lowest.	Mean Daily Range.	Approximate Mean for months.	Number of Days it fell.	Amount collected. Inches.	Amount collected. Cents.	General Directions.
1874.											
January ...	83	43	40	79·67	52·71	26·96	66·16	...	...	...	E.
February ...	89	42	47	83·00	56·00	27·00	69·50	2	...	37	S.E.
March ...	94	58	36	89·80	66·87	22·93	78·33	...	...	...	S.W.
April ...	101	67	34	95·76	70·93	24·83	83·33	2	...	50	N.W.
May ...	96	74	22	92·87	77·35	15·52	85·11	2	2	20	W.
June ...	93	74	19	82·26	56·63	26·63	69·44	11	10	16	S.W.
July ...	84	72	12	79·00	70·58	8·42	74·79	19	6	3	S.W.
August ...	79	71	8	76·66	72·22	4·44	74.44	17	3	20	S.W.
September.	84	72	12	80·63	73·56	7·07	77·09	11	8	10	W.
October ...	85	64	21	82·22	73·22	9·00	77·72	7	5	88	W.
November	83	58	25	80·26	65·76	14·50	73·01	2	...	35	W.
December	84	49	35	80·54	39·58	40·96	60·06	...	...	...	E.
Mean ...	88	62	26	83·22	64·61	18·61	73·91	73	36	79	
								Total			

Detachment of the Poona Horse.

DHULIA.—In medical charge of Surgeon G. BAINBRIDGE; Strength, 148.

Location and Movement and Detachments. — One hundred and ten men are stationed in Dhulia, and about 40 at the out-posts of Shahda and Jamner.

Sixty or seventy of the men are annually relieved from the head-quarters at Sirur.

Topography, &c. — This detachment is quartered on well-elevated and naturally well-drained ground in the angle formed by the junction of the Moti Nallah with the river Panjra. The sub-soil is an alluvial shale, which in the neighbour-

hood is more or less covered with the various qualities of black soil, but in this particular situation is quite bare.

The water supply from the river, the nallah, and one or two wells, and also from an irrigation channel which runs through the camp, is generally plentiful and wholesome.

Effects of Climate.

The men stationed in Dhulia are always, as a body, exceptionally healthy, and in no way affected by climate. Cases of fever from the out-posts above-mentioned are not now very frequent since several of the more unhealthy places were abandoned, and in Dhulia bad cases are rare.

Lines.

The quarters of the men cannot in any way be called lines. Most of them live in huts belonging to themselves, of rude construction and with thatched roofs, and arranged in a very scattered, irregular, and disorderly manner over a considerable extent of ground. In addition to these there are two rows of thirty huts in all, which were built from some regimental fund last year when emergently required to supply deficient accommodation; they are of a very frail and temporary structure, and by no means proper habitations for soldiers. Among other defects the roofs are leaky, and the floors low and (in wet weather) damp.

The huts occupied by the men are intermixed in a confused and disorderly way with those of their own syces, and of gowlees, mochees, dhers, and others, who number several hundreds from the civil population of this locality, which is known as the Moglaee.

I have frequently in my annual reports alluded to this state of things; but nothing has been done to change it, except that plans and estimates for lines were called for and submitted about a year and half ago. Extracts from my reports for the month of June 1871 and for the year 1871 were forwarded to the Sanitary Commissioner, but I have not heard of any action having been taken in the matter by that officer.

Conservancy and Sanitary Arrangements.

The men's houses are furnished with badly-constructed privies for the women; these are cleansed by regimental sweepers. The men and the civil population of the encampment, or rather village, practise a rural and natural system of conservancy by frequenting the fields, open spaces, and nallah in the vicinity. There are no organised sanitary arrangements except the partial removal of road sweepings and refuse from the camp by sweepers.

Water-supply.

The ground on which the camp is situated and the whole of that in the neighbourhood have a natural fall towards the river and nallah already spoken of as furnishing the chief water-supply. If, therefore, a light rain-fall occur during the dry season, or after an unusually long interval in the regular rains, and such rain-fall is not sufficient to cause a flood strong enough to carry the accumulation of filth on the surface of the ground away down the river, the concentrated solution of such refuse and ordure may, of course, be deposited in both the streams at the places from which the water-supply is drawn, and must in that case influence the quality of the water. Practically speaking, however, the water does not appear to produce ill effects.

Food and Clothing.

Food in this district is at present abundant and tolerably cheap, and the men's clothing is, on the whole, suitable for peace service. I should, however, recommend a larger puggree for active service and all duties necessitating exposure to the sun; the present regulation one is little or no protection to the head against sun, cold, or wet. I think also that the men's trousers are of much too thin a material to be of use in active service.

Exercise, Amusement or Occupation.

Little or no voluntary exercise is taken by the men, except in walking and riding to and from the bazaar, half a mile distant. Amusements are unknown, and occupation is of very light and genteel nature. The silladars do not even, as a general rule, groom their own horses, or clean their kit, and there is one syce to every two horses.

Lock-up Room and Cells.

There is one cell at the quarter-guard; it is of fair size, but somewhat badly ventilated.

Marches.

There have been no marches during the year.

Hospital.

The hospital building has ample accommodation, and is ventilated sufficiently, though on rather a bad system, which gives too much perflation, and makes the patients uncomfortable. Provision should be made for ventilation at the level of the tops of the doors whenever it is necessary to close the latter on account of wind or rain.

There is no well or other source of water-supply at the hospital : a bheestie brings all the water from a distance of half a mile. In other respects the hospital is a properly appointed institution.

Sickness.

The sickness has been moderate in extent, and as a whole unimportant in its nature. There was only one death, and two men were granted sick leave for short periods. It cannot be said that any particular disease was specially prevalent. Out of a total of 37 treated there were only 15 cases of fevers, one of these being measles, two febricula, and the other mild ague ; the remainder of the men treated suffered from comparatively trivial maladies, except in the fatal case

Resumé.

The health of this detachment, notwithstanding the unfavourable sanitary condition noted above, has been, during the past and several preceding years, very satisfactory. This may be attributed to the general steadiness of the men, the light nature of their duties, their good constitution, and a not unfavourable climate.

The fact that only twelve cases of malarial fevers were treated during the whole year, and that under Class A. a single instance of measles and two of febricula, and in Class B one case of secondary syphilis and one of lumbago were the only other "general diseases" which occurred, are sufficient proofs of the healthiness of the corps, when it is added that dysentery and diarrhœa, lung affections and liver disease, were entirely unknown.

4th Rifles.

SATARA.—In medical charge of Surgeon-Major ROSS ; Strength, 350.

On the 4th February 1874, the head-quarters wing of the Rifles left Baroda by special train for Poona *en route* to Satara, halting for the night at Parel, where tents had been pitched for their accommodation. Next morning (5th) they proceeded to Poona, which was reached about 6 in the evening. Three days were passed in the capital of the Deccan for the purpose of procuring carriage, &c. The march proper on Satara was commenced on the 9th, *viâ* Khed, Kikvi, Paurgaon, Yellow, Bhunj (where a halt was called), and Nagwari. Satara was reached on the 16th idem.

The health of the men improved on the march. This was to be expected on escaping from the malarious climate of Baroda, which exerts a debilitating influence on Native as well as European troops. During the tour of duty there the sepoys were badly housed. On the march itself contusions and shoe-bites disabled not a few, for whom it was necessary to provide conveyance. At such times, perhaps, it were better to permit the sepoy to march bare-footed, or to wear the native sandal. The boots in use, as a rule, fit badly.

Satara cantonment, once a military now a civil station, is distant about a mile from the town, which gives its name to camp and collectorate. Satara itself, at an elevation of 2,320 feet above the sea, lies in lat. 17°35′ N. and long. 74°10′ E. The historian of the Mahrattas thus graphically describes its situation :—"The town of Satara lies immediately under the fort, in a deep hollow nearly surrounded on three sides by hills, cut off from the west by the Sayhádri mountains, and from every other quarter by the Yena, Krishna, and Oormooree rivers." If the view is extended, an amphitheatre of hills is seen completely surrounding it ; and the landscape, far as the eye can reach, is one of the most beautiful in the highlands of the Deccan. Viewing the town from the hill-fort, called in the vernacular Mungla Devi, the town is seen lying embosomed in wood at the spectator's foot, in a valley formed by Yawateshwar on the one hand and by the "specular mount," whence the scene is surveyed, on the other. In succession, but at remoter distances than those just named, stand the hills of Suria Pant, Poteshwar, Hati Mal, Jarandeshwar, Chandan, Wandan, Alak and Palak. These last four are hill-fortresses. Between Yawateshwar and the fort the spurs of either hill unite, and form a curtain, or back-ground, so that the town is protected on both flanks and rearward. This hill-curtain has been pierced by a tunnel 70 yards long, and communication opened thence by road to Kolhápur in the south and to the neighbouring town of Parli. The ascent of the hill-fort, though steep, is easy now-a-days by means of a bridle path, which as it rises runs parallel with the town until the gateway, which gives admission to the *enciente*, is reached.

The summit of the hill is about 1,100 yards in length by 500 yards in breadth. Three or four tanks of small size are met with. These contain water, which is said to be good. The proposal to utilise the water of these tanks, for the benefit of the town below, has been mooted once and again, but negatived on the ground of scanty supply. The fort must have been

of great strength and well nigh impregnable in former times. "The defences," as stated by Thornton, "consist of a scarp upwards of forty feet in perpendicular black rock, on the top of which is a stone wall." "Its most striking feature is the north-east angle, which assumes nearly the shape of a tower, and is one of the strongest points, the rock being 42 feet high, and the bastion now on the top of it consists of 25 feet of masonry, making a total of 67 feet." Enormous masses of rock (boulders) now lying near the Adalat are said to have been hurled in "old Deccan days" from above on the enemy below, who were thus greatly harassed by these missiles, which recall the weapons of the giants mentioned in classic story.

In A.D. 1818 the fort fell into the hands of the English after a feeble resistance. At an elevation of about 907 feet above the city and camp, the temperature during the hot season is said to be 8 or 10 degrees cooler than in Satara. The old palace of the fort has occasionally been occupied as a barrack by European soldiers with considerable benefit to health, as the place is a hill sanitarium of no mean value, and within easy distance of camp. Yawateshwar, which stands higher still, being by rough aneroid levelling calculated at about 1,407 feet above the camp church, is a favourite resort with some when the heat on the *plateau* below is excessive, but the place is of small extent and soon exhausted; people are, therefore, glad to flee the melancholy of such a retreat, and betake themselves to the purer air and lighter soil of Mahableshwar. The cantonment of Satara stands on sloping and hilly ground which is broken in various directions by nallahs, which run from Yawateshwar and the hill-fort. One of these holds a middle course through the station and divides it into two nearly equal portions. In the absence of all sanitation it is unfortunately the *cloaca maxima* of the cantonment at all seasons. Rising at the foot of Mungla Devi, and in conjunction with another nallah from the base of Yawateshwar, the drainage of the greater portion of camp is secured. In the monsoon these nallahs are heavily flooded, and carry large volumes of water to the Yena, which is distant a mile and a half from the station.

The old Poona road at this distance crosses the river by a handsome stone bridge which was erected in 1845. The Yena soon after, near the village of Mowli, falls into the Krishna, "which derives its water from a number of considerable rivers rising in the basaltic and gneiss summits of the Western Ghats." Two other nallahs, both rising at the foot of the hill-fort, and joining the Yena before it reaches Mowli, drain the southern end of camp.

The geological formation is trap. The soil in camp is of no great depth, but that which occurs in the valleys of the Yena and Krishna is rich and fertile.

The climate of Satara is one of the most charming and salubrious in the Bombay Presidency.

Enthusiasts speak of it as the "earthly paradise" of Western India. Of this there is no doubt that it possesses attractions for many who, year by year, voluntarily pass the rains here, living and glad to live in wretched bungalows which leak like sieves, and for which exorbitant rents are paid. Compensation must be sought for in the salubrity of a station for which nature has done so much, and man so little, to render residence desirable.

To the east of cantonment stand the regimental lines, which consist of twelve blocks, each containing 28 single rooms.

They stand north and south and were erected in 1872-73. They occupy the centre nearly of a quadrilateral space, which includes the parade and drill grounds. The buildings of "wattle and daub" are for such material in a tolerable condition outwardly, but the partition walls are not in a good state and require renewal. The capacity of each room amounts to 810 cubic feet. The lines and other buildings, including the quarter-guard, school, and band houses, are built on plinths of stone and mud of varying height according to the nature of the ground, and ranging from 6 inches to 3 or 4 feet.

Ventilation is defective, as there are no openings of any kind with this object in the sepoys' quarters, and when cooking is carried on therein, the smoke has no way of escape except by the doors. The roofs are chuppered in the style peculiar to the Deccan; and the wonder is, that the lines, composed as they are of such combustible elements, are not oftener consumed by fire. In the monsoon, in consequence of a considerable increase in the number of cases complicated with bronchitis and rheumatism, as was noticed at the time, the huts in the regimental lines were discovered to be uninhabitable at night, as they were infested by fleas, bugs, &c., and the men were driven outside to sleep *sub Jove frigido*. The lines are dry enough as they stand on ground, which slopes to the N. E. Moorum immediately underlies the soil, which is shallow.

The Sudder Bazaar lies due north of the lines, and is objectionably near, being within a distance of 135 yards.

It is kept in a filthy state ; the smells in it and all around from night-soil are disgusting. The prostitutes who live in the bazaar, and ply their loathsome vocation there, are under supervision of no kind. On sanitary grounds the propriety of establishing a lock-hospital at this station is beyond question. Some of the worst cases of syphilis I have ever seen were in patients who contracted disease in the Sudder Bazaar.

There are no neighbouring villages which call for notice here. Mowli, at the junction of the Yena and Krishna, has been alluded to. The temples there are highly esteemed by Hindu devotees.

The drainage of the lines is simply surface, and the nature of the ground prevents water from lodging to any great extent.

The mode of conservancy is offensive, and only susceptible of improvement by the introduction of the dry-earth system in the latrines now in use. The trench system when properly worked is the best under all circumstances.

The drinking water furnished by the wells in the lines dries up in the hot weather. In March 1874 this was the case, and the men had to go for water a long way,—some to the river distant a mile and a half, and others to the Ranee's garden, half a mile off. The supply from both sources, and that also from the wells before they dry up, is good, but an analysis is still a *desideratum.*

In Satara food is of excellent quality, abundant, and cheap.

The regimental dress consists of cloth of invisible green ; it looks well enough on parade, but is quite unsuited for tropical wear, except in the cold season. Khakee is substituted in the hot weather. The men when off duty assume the native costume, which is made of cotton, and consists of the dhotee, pehran, phatai, and over-coat or ungerka. The head-dress is either a cap or turban.

The duties of the men are light, and do not appear to exercise an unfavourable influence on health.

Since coming to Satara the amusements of the men have been at a stand-still. There is no *talimkhana* at present, but it is in contemplation to construct one. Some of the sepoys on holidays go fishing and shooting.

There are no lock-up rooms or cells ; prisoners are, therefore, confined in the quarter-guard.

The hospital is a hired bungalow, situated in what was in former times the officers' lines, and near two roads which run in front and behind. It is hardly necessary to say that it possesses none of the requisites of such an establishment. The site is bad. The compound in which it stands is unfenced and ragged. There is no proper accommodation in the out-houses for the hospital servants.

In July the Executive Engineer was requested to give his opinion regarding the best method of ventilating the bungalow. In his reply he pointed out the unsuitability of the building for an hospital, and the grave results likely to follow ventilating operations therein. The house threatens to fall at any moment. The supporting pillars of the porch are out of the perpendicular. The walls are cracked in all directions, and suspicious places are shored up with stout timber as a makeshift.

When the sick list rises to 10 the place is over-crowded. The accommodation so called could not be worse. In the monsoon the discomfort which accrues from treating sick men in such a place is inconceivably great; and much aggravated, of course, when the rain continues to fall, as it sometimes does, for days together.

A properly appointed hospital is urgently needed.

The dry-earth system is worked in hospital. The latrine, however, is ridiculously small, there being only one seat. The landlord declines to provide larger accommodation.

Two bheesties fetch the hospital water-supply from wells, two in number, near the lines, and from the river or the Ranee's garden in the dry season. In the lines the water is reached, it is said, at an average depth of 40 feet from the surface. In the well, which stands near their south-west angle, there is a depth of 48 feet with 17 feet of water. No impurity drains into the wells : one stands high and above the level of the sepoys' quarters, and the other at a distance of 194 yards from the lines. To insure a perennial supply of water, other wells should be dug, and those in use should be deepened.

Ague was the principal malady. There were 109 admissions, which with three remaining make 112 under treatment. There was one death, which took place in Baroda on the 2nd February, two days before the regiment quitted that station. Seventeen men were invalided.

Fever was the principal cause of sickness, which, however, has not been excessive.

The only casualty which occurred was due to jaundice.

The deceased was a Hindu.

The rain-fall during the year amounted to 41 inches 29 cents. Its influence on the general health was felt in the increase of cases of bronchitis and rheumatism.

Subjoined is a table giving the rain-fall at three different points in camp and on Yawateshwar Hill :—

	Inches.	Cents.
Hospital, H. M.'s 4th Rifles N. I.	41	29
,, Queen's...	42	...
Civil Hospital, City	46	...
Yawateshwar Hill	59	...

In connection with climate the temperature, as observed in hospital, was inadvertently omitted. The following is a table of the *maxima* and *minima* of temperature, given by self-registering thermometers, for ten months, and a column showing the direction of the wind during that period :—

	1874. Temperature.		Direction of the Wind.
	Max.	Min.	
March	90·0	65·4	N. W.
April	94·7	72·0	S. and N. W.
May...	90·9	73·4	E. and N. W.
June	80·2	71·6	W.
July...	77·0	70·0	W.
August	76·3	68·7	W.
September	80·0	69·6	W.
October	78·8	65·5	S. and S. W.
November	77·2	60·0	E.
December	76·0	56·8	S. E.
Total...	821·7	673·0	
Average ..	82·1	67·3	

Epidemic disease was unknown.

Vaccination of 43 children and 17 recruits was performed ; 7 of the latter were unsuccessful. The lymph was found to be good on all occasions. The regiment was re-vaccinated last year, 1873, with the results then stated.

The general health and physique of the men have improved since quitting Guzerat.

No special or exceptional diseases have been treated. In drawing these remarks to a conclusion it may not be out of place to suggest that steps should be taken to improve the sanitation of Satara. It says much for the salubrity of the climate that, in the absence of proper sanitary measures in the station, and more especially in the Sudder Bazaar, which is so objectionably near the lines, that the health of the sepoys should be so good.

The native medical pupil attached to this hospital writes to dictation five times a week, and is examined three times a week in anatomy, materia medica, medicine, and surgery.

H. M.'s 19th Regiment Bombay N. I.

SHOLAPUR.—In medical charge of Surgeon-Major CATES; Strength, 652.

Location and Movements of Corps.

1. The regiment after the termination of the camp of exercise at Chinchwad marched into Poona on the 26th December 1873, and left again on 29th idem for Sholapur, where it arrived on 13th January 1874 and where it has been located ever since.

Detachments.

2. The regiment has had no detachments from head-quarters during the year.

3. Sholapur is situated in latitude 17°34′ N. and longitude 76°12′ W.

The soil in the greater part of the cantonment of Sholapur is light and sandy, though in parts good, rich, black cotton soil is found. In many places the rock is but very slightly covered with soil, and it often crops out from the surface, becomes disintegrated, and crumbles away. The prevailing geological formation is trappean. Water is fairly abundant in the cantonment, and derived from a large tank and from wells.

The best drinking water is from a well in the Moti Bág, which since the arrival of the regiment has been cleared out, the ground around it re-paved, and the whole enclosed by a wall to prevent the bheesties from allowing their bullocks to stand on the surrounding pavement, as was formerly the case. It was found also that natives were in the habit of sitting on the parapet and cleaning their mouths and teeth, and, of course, spitting into the water; but this has now been put a stop to, and the water is carefully preserved from defilements of any sort.

From the general conformation of the ground in the cantonment, which is placed on a ridge with nallahs on either side, the ground sloping towards them, the natural drainage is good, and there is no attempt at any artificial drainage.

4. The climate, judging from the experience of one year only, is equable and healthy, and, as far certainly as the cantonment is concerned, not injuriously affected by any peculiarity in the topography and physical geography as described above. Fever prevails to a considerable extent soon after the termination of the monsoon rains, but is due, I think, more to the sudden change of the temperature and the setting in of the dry east winds than to any local peculiarity. It cannot, I believe, be due to the drying up of the large Moti Bágh tank, except to a limited extent, in the case of houses situated near it, as at the time when it prevails the lines are well to windward of the tank. The nature of the surrounding country, too, is not such as injuriously to affect the climate. Dry hot winds prevail, as might be expected, in the months of March and April, and dust-storms are frequent.

Lines—available Space.

5. The lines were newly built on the standard plan, about five years ago, by the 4th Rifles, and are very good. As they were fully described by Surgeon Leggatt in his annual report of the 28th Regiment N.I. for 1871, it will not be necessary for me to enter into any great detail on the subject, as no additions or alterations have since been made.

As regards available space, that has been found, as far as I am aware, to have been amply sufficient for the wants of the regiment, and I have heard no complaints on that score.

The cubic space in each sepoy's quarter is about 1,541 cubic feet, and the total area about 139 square feet; but the average space per occupant, of course, varies greatly according to the number of the inmates of each house, many of the sepoys not having their families with them, whilst the families of others may consist of eight or ten persons. On the whole, however, I think the regiment may be considered to be very comfortably housed. The lines are very well built, each block being raised on a plinth of rock varying in height from 1 to 3½ feet. The houses are built of stones and mud with tiled roofing.

Trees have been planted in front of each row of huts, which are growing fairly well, and will, when they have attained a greater size, afford a grateful shade in the hot season, and also be some slight protection from the strong winds prevailing in the monsoon months and the hot season, the lines being in a very exposed position.

Ventilation.

The ventilation of the lines generally is excellent, there being streets 60 feet broad between the rows of huts, and a space of 45 feet between the different blocks, thus allowing free perflation of air. The ventilation of the huts themselves is also good.

Bazaar.

There is a small regimental bazaar in the rear of the lines, between them and the hospital, consisting of a few shops, which is under the supervision of the regimental chowdri, and is kept in excellent order.

Neighbouring Villages.

There are no villages in the neighbourhood of the lines; but the Sudder Bazaar of Sholapur (which is not within cantonment limits) is situated about a quarter of a mile to the north-west of the lines, and still nearer to the hospital. From the east end of the Sudder Bazaar a dry nallah runs, which is in some places within 150 to 200 yards of the regimental hospital and lines, and when the regiment first arrived this was a common place of resort, by the people inhabiting the bazaar, for purposes of nature, and was becoming a great nuisance. I called attention to it, on several occasions, in my monthly sanitary reports, and under instructions from the General Commanding the Division, the Commanding Officer brought the subject to the notice of the civil authorities. The nuisance has somewhat abated since that time, police sepoys and peons having been placed at intervals to prevent the people from resorting to the nallah, but it has not yet entirely ceased. The general sanitary state of the Sudder Bazaar, which is within municipal limits, is not satisfactory: there are no public latrines for the poorer inhabitants, and I think it would be very desirable to bring it within cantonment limits, and place it under the control and supervision of the Cantonment Committee.

Drainage.

The lines being built on an eminence, with a considerable slope in one direction, there is good natural drainage, which falls into a small nallah, and is carried off. The soil, too, being light and porous, with rocky sub-soil, there is but little soakage, and the ground quickly dries.

Tanks.

During the rains a small tank naturally forms in the hollow below the lines, the watershed both from the lines and the surrounding country tending that way; but this lasts but a very short time, and by the end of January is generally quite dry. When the regiment arrived here on 13th January, last year, there was not a drop of water in it. I do not think its drying up in November and December exercises any injurious effect on the health of the regiment, as the wind very rarely blows from it over the lines or hospital.

Conservancy and Sanitary Arrangements.

6. The lines are kept scrupulously clean, under the supervision of the Quarter-Master and Quarter-Master Havildar, by a staff of sweepers paid by the regiment, each sepoy contributing a small sum a month for the purpose. The refuse is removed twice a day by the conservancy carts, and taken to a distance. There are three latrines, two for the men and one for the women, situated about 300 yards from the lines, and well to leeward. They are built on the old plan, and are not quite unobjectionable; for, though kept as clean as possible, I have rarely visited them without finding a more or less marked urinous odour apparent. This, however, I believe to be unavoidable, and it is due in great measure to leakage from the conservancy pans, or from spilling at the time of removal, which is done twice a day. The sanitary arrangements of the huts are not quite satisfactory, for the reasons given by Dr. Leggatt in his report for 1871, viz., that the bathing places in the verandahs are also used to a certain extent as urinals, the urine and waste water passing off together by a small drain, and eventually soaking into the ground.

Water-supply.

7. The water-supply is derived partly from wells and partly from the large Moti Bágh Tank, (the latter owing to its distance being, as a rule, only resorted to in the hot weather, when the wells generally fail,) and is decidedly insufficient. The wells, two in number, are situated in or near the lines, and are both, I think, from their position, likely to have the water contained in them rendered impure by percolation of deleterious matters, though the men consider the water good, and even prefer that of the well which I should expect, from its position, to be most defiled. Both wells are situated on a lower level than the lines, and are, therefore, liable to receive any impurities carried down with the drainage; and the lower one, which is used by the low-caste sepoys, is also so situated, with reference to the latrines, that I consider it almost impossible that it can fail to be defiled with impurities from that source. Some months ago I suggested the construction of a new well with a view to increasing the amount of the water-supply in the hot season, and a site was selected by a committee to the north-east of the lines, away from the line of drainage, and where there can be no chance of the water being contaminated.

Food.

8. There is an abundant supply of every kind of food used by the sepoys, and it is generally cheap.

Vegetables are procurable nearly all the year round at a cheap rate, and the effect of this plentiful supply of good, wholesome food is shown by the reduction in the number of cases of scurvy, only 6 having been treated during the year, against 27 in the previous year, when the regiment was quartered in Bombay, and all these 6 probably contracted the disease in Bombay.

9. I have no special remarks to make on this point, beyond pointing out that a large number of cases (36) of contusion of the lower extremities have been treated during the year, most of which were of the feet caused by the rough leather and ill-fitting of the sepoys' boots. I am of opinion, too, that, when exposed to the sun on guard or other duties, a better protection for the head is required than the present forage caps, even with the white cover, which does not protect the temples at all. A few cases of contusion of the front of the shoulder from the kicking of the rifle during musketry drill have come under observation, one or two of which were rather severe ; and I think some sort of pad, such as I have lately seen described in the *Indian Medical Gazette* by a medical officer of the Bengal Service, is a desideratum.

Clothing.

10. These have been of the ordinary kind during the year, and have exercised no prejudicial effects on the health of the men.

Duties.

11. The sepoys, when off duty, seek their own amusements and occupation. There is a *tálimkhana*, which is much resorted to, especially by the Purdasee and Puujabee sepoys.

Exercise, Amusement, and Occupation.

12. There are two solitary cells situated in a corner of the hospital compound. Each has a cubic capacity of 1,050 cubic feet and a superficial area of 100 square feet. They are, however, but rarely used, having, I think, been occupied only once during the year the regiment has been here.

Lock-up Rooms and Cells.

13. The regiment was on the march from 1st to 13th January, the date of its arrival here. The marches were, as a rule, of moderate length, the weather was cool and fine, and the men, I think, derived benefit from it, but very little sickness occurring during that time.

Marches.

14. The hospital is situated about 250 or 300 yards in the rear of the lines, between them and the officers' lines, on good, open ground, and stands in a compound of considerable size, surrounded by a prickly-pear hedge. It consists of one long ward, three small rooms—used, respectively, as an office, compounding room, and store-room—at one end of the ward, and another small room at the corner of the back verandah. It is surrounded on three sides by a good broad verandah. The cubic contents of the ward are 2,872 cubic feet, and the superficial area 2,140 square feet. There is available space for 20 beds only, without over-crowding, or placing the beds in front of the windows, and this is quite insufficient for a full regiment, the average daily sick of this regiment during the past year having been 27, and the actual number sick having at one time reached upwards of 60, though only for a few days. In the compound there are excellent quarters for two hospital assistants and two native medical pupils, also for 2nd class servants. There are also cook-rooms, and two latrines on the old plan. The solitary cells are likewise, as previously stated, in the hospital compound.

Hospital.

15. This is afforded by doors and windows, and also by ventilators in the roof, and may be considered very good. My only doubt is as to whether, in the cold season, when the hospital is much exposed to strong winds from the east and north-east, it is not excessive, especially for rheumatic patients and those suffering from pulmonary affections. The windows on the windward side can, it is true, be kept closed, but then the ward is apt to get foul and close, especially when full.

Ventilation.

16. It will be gathered from the above general remarks on the hospital that with the present available space over-crowding must at times be unavoidable. In October, November, and part of December, when a great number of fever cases occurred, it was necessary to put patients in the verandahs, and even then they had to be packed more closely than was at all desirable ; and as grass tatties had to be put upon the east and north sides, to protect them from the cold winds, the ventilation of the hospital was somewhat interfered with.

Over-crowding.

17. The accommodation is insufficient for the wants of a full regiment, and the requirements are the following, viz., additional ward accommodation for general patients, a separate ward for contagious diseases, and a dead-house. At present *post-mortem* examinations, when required, which fortunately is seldom, have to be made in the small corner room in the verandah previously alluded to. This small room can be made available as a darkened ward for eye cases when required. I have already brought these requirements to the notice of the military authorities ; plans and estimates have been sanctioned, and the works have been included in the Executive Engineer's budget estimate for 1875-76. A further requirement, which I have omitted to notice, is a bath-room.

Accommodation and Defects.

Conservancy.

18. The compound is kept clean by the hospital sweepers, all refuse being carried away daily by the conservancy carts. The latrines are cleaned out twice daily, the excreta removed in covered iron receptacles, and they are kept as clean and free from odour as possible.

19. The remarks on the water-supply of the lines apply also to the hospital.

Sickness, Mortality, and Invaliding.

20. The admissions into hospital during the past year have been 2 less than, and the total number treated eight in excess of those of the previous year, the respective figures having been in 1873, 952 and 967, and in 1874, 950 and 975. The percentage of treated to strength has been 149·5 against 148·7 in 1873, and the percentage of deaths to strength ·6, and deaths to treated ·4, or almost precisely the same in the two years. The average number of daily sick, however, has been 27 in the year under review against 31·2 in the previous year. The number of deaths, viz. 4, was the same in both years.

Although the number treated, in proportion to strength, has been as large as in 1873, when the regiment was considered by Surgeon-Major Trestrail to have been very unhealthy, yet I am of opinion that the general health of the corps during the past year has really been very much better than in 1873, the large number of sick treated having been due in very great measure to fever, which prevailed extensively during the months of October and November, but which was of a very mild intermittent type, and, though necessitating a few days' sojourn in hospital, did not permanently affect the men's health. The number of cases of ague treated was 597 against 310 in 1873, and when the excess of 287 is deducted from the total treated, a marked improvement is apparent in the health of the regiment as compared with the previous year.

The number of deaths, as previously stated, was four, the same as in 1873. The number invalided during the year was 13, of which 10 were at the time under treatment, viz., 4 debility, 1 hæmorrhoids, 1 local paralysis, 3 chronic rheumatism, and 1 palpitation of the heart.

Fifteen men have proceeded on sick leave during the year, and 9 have had their diseases changed, thus accounting for the 34 shown in the return as "discharged otherwise."

Principal Causes of Sickness.

21. Of the causes of sickness during the year, intermittent fever was, in a very marked degree, the chief—no less than 597, or considerably more than half the cases treated, being due to this cause. The disease which presented the type of a mild intermittent (chiefly quotidian) prevailed to a certain extent throughout the year, but more especially soon after the arrival of the regiment at Sholapur (due, I fancy, to the great change of climate from that of Bombay), and again and to a still greater extent in October, November and December, commencing immediately after the close of the monsoon and setting in of the cold, dry east wind. During these three months no less than 529 out of the total number of 597 cases of ague came under treatment. As regards the cause, it would appear that intermittent fever usually prevails in Sholapur, during the months immediately succeeding the cessation of the monsoon rains, both in the cantonment and town; but I can find no special source of malaria or other poison to account for it, and believe it to be due to the more or less sudden change from a moist, tolerably warm atmosphere to a comparatively cold and dry one, accompanied by cold, dry east winds, and its effect upon the action of the skin. It cannot, I think, be caused by the drying up of the large tank near the Moti Bágh; because, in the first place, it begins to prevail before there is any sensible diminution in the quantity of water in the tank, and, secondly, at the time at which it chiefly prevails the wind usually blows from the lines *towards* the tank, and not *from* the tank to the lines. I believe the drying of the tank to be, to a certain extent, a cause of fever at a later period, having had several cases amongst the families of the European officers, whose houses are nearest to it, in November and December, but I am convinced that it has no effect on the health of the sepoys living in the lines.

The rain-fall last year was considerably beyond the average, viz., upwards of 34 inches, and a large number of fever cases occurred in the 28th Regiment N. I. after the heavy rainfall of 1872. Some of the more obstinate cases of fever were sent away on sick certificate, and the remainder discharged to duty, with the exception of 15 remaining on the sick list at the end of year.

The other cases under the heading "General Diseases, A." comprise 3 of chicken-pox, 1 of measles, 1 of simple continued fever (a fatal case alluded to under para. 22), 4 of remittent fever (one, at least, of which was severe and accompanied by a temperature at one time of 105°), and 1 of malignant cholera. The latter will be again alluded to under para. 28.

Under Division B. have been treated 1 case of acute rheumatism, 31 of chronic rheumatism, 14 of primary and 5 of secondary syphilis, 6 of scurvy, 8 of lumbago, 2 of sebaceous tumour, and 1 of scrofulous disease of glands.

Under this division there has been a considerable diminution in the number of cases treated compared with 1873, most marked in the cases of rheumatism and scurvy, which in 1873 were 52 and 27 respectively against 32 and 6 in the past year. The cases of syphilis also show a slight reduction, but there is an increase in the number of cases of lumbago.

None of the cases under this heading presented any unusual features, nor have I any new mode of treatment to announce.

Of Diseases of the Nervous System have been treated 11 cases, due, respectively, to local paralysis, (a case of obstinate ptosis, with a marked syphilitic history, but obscure general symptoms, in which iodide of potassium and mercury were both tried without effect, and the subject of which was invalided), brow-ague 4, sciatica 3, and pleurodynia 3. Diseases of the Eye, &c. caused 20 admissions, viz., 17 of conjunctivitis, 1 of iritis (syphilitic), and 2 of keratitis. The last two were well-marked cases, occurring in men of impaired constitutions, and were very obstinate, but eventually yielded to repeated blisters to the temples and the administration of tonics.

One case of inflammation of external meatus of ear was treated.

Under the head of Diseases of the Circulatory System occurred two cases of palpitation, one of which was discharged to duty, the other was invalided.

Diseases of the Absorbent System also account for two cases, one of inflammation of glands, and of chronic enlargement of glands, neither of which require special comment.

For Diseases of the Respiratory System were treated 36 cases, viz. 17 of bronchitis, 3 of asthma, 4 of pneumonia, 3 of chronic pneumonic phthisis, 3 of pleurisy, 1 of laryngeal catarrh, and 5 of bronchial catarrh; of these six are shown in the return as "discharged otherwise," some having been invalided, some sent on sick leave, and the diseases of others changed.

One of the cases of pleurisy was a very severe one, complicated with a certain amount of pneumonia in a very young soldier, purulent effusion having taken place, which burst through the lung; but the patient eventually made a very good recovery, with very slight retraction of the chest on the affected side, and has never been in hospital since. Towards the end of the year a severe case of double pneumonia was treated. The man was for a few days in a critical condition, but made a good recovery.

Diseases of the Digestive System account for a large number of cases, comprising 2 of gum-boil, 1 of enlarged tonsils (returned as fatal, but in which the fatal result was due to other causes, as explained under para. 22), 8 of dyspepsia (one of which should really be classed as dysentery, to which the patient succumbed), 4 of gastrodynia, 26 of dysentery, 11 of diarrhœa, 1 of colic, 4 of tapeworm, 4 of hæmorrhoids, 4 of congestion of the liver, and 2 of splenitis. Two deaths are shown under this class of diseases, 1 from dyspepsia and 1 from diarrhœa, but in neither case is the real cause of death indicated. In the first, death was due, as just stated, to dysentery; and in the second, who was admitted with diarrhœa, death occurred suddenly, nine hours after his admission, from cardiac embolism. Further allusion will be made to these cases under para 22.

The cases of dysentery were of moderate severity, and all were discharged to duty, and the same may be said of those of diarrhœa.

Diseases of the Urinary System and Urinary Organs comprise 22 cases, including 1 of irritability of bladder, 12 of gonorrhœa, 6 of bubo, 2 of gleet, and 1 of stricture, none of which call for special notice.

Diseases of the Organs of Locomotion include 3 cases of acute and 3 of chronic synovitis, which presented no features of special interest, and the same may be said of the 14 cases included under the head of Diseases of the Cellular Tissue.

Diseases of the Cutaneous System account for 40 cases, viz., 1 of prurigo, 4 of psoriasis, 2 of herpes, 5 of ulcer, 20 of boil, 4 of whitlow, and 4 of scabies. Lastly, "Injuries" comprise 1 of burn, 1 of contusion of head, 1 of contusion of chest, 7 contusion of upper extremities (chiefly of the shoulder, due to the kicking of the rifle during the annual course of musketry), 36 contusion of lower extremities (mostly cases of what is known as "shoe-bite" due to badly-fitting boots and the hard leather they are made of), 7 of sprain of lower extremities, and 1 of wound of leg.

Ten minor operations were performed during the year, which do not call for special remark.

In addition to the above, nine cases of sickness have occurred amongst the European officers, one of whom has been three times and three others twice each on the sick list during the year.

Principal Causes of Mortality.

22. The four deaths which have occurred during the year were due, respectively, to simple continued fever, with marked cerebral symptoms and high temperature, enlarged tonsils (as shown in the return, but really caused by extension of inflammation to the air passages and thoracic viscera), dyspepsia (this death was really due to dysentery, but by an oversight the disease was not changed), and diarrhœa (this also not being the real cause of death, which occurred very suddenly, and was found, *post mortem*, to be due to cardiac embolism).

Three of these deaths occurred in mere lads, the other in a man of 16 years' service. This man was originally sent from the camp of exercise to the Depôt Hospital at Poona, suffering from dyspepsia, of which the most marked symptom was very obstinate hiccough. He was sent by rail from Poona to Sholapur with other sick men, and on my arrival at the latter place I found him suffering from a severe attack of dysentery. This yielded to treatment; but a relapse, in his weak state, proved fatal.

Mortality according to Race.

23. All the four deaths have been of Hindus; but from the circumstances attending them no conclusion can be drawn as to the influence of race as affecting the mortality.

Influence of Rain-fall.

24. The rain-fall of the year, which was considerably above the average, may, I think, be considered as having had some influence in causing the large amount of sickness from fever in the last three months of the year, as it would appear, from the records and reports I have had an opportunity of consulting, that in previous years an unusually heavy rain-fall at Sholapur has been, as a rule, followed by a large number of fever cases in the cold season. I am not aware of any further special influence exercised by the rain-fall of the year.

Epidemics.

25. There have been none during the year.

Vaccination and Revaccination.

26. Vaccination has been carefully and persistently carried out during the year. Ninety operations have been performed, of which 68 were successful, and 17 unprotected persons were living in the lines at the close of the year, all of whom were unfit, either from sickness or extreme infancy, for the operation. Revaccination has been performed in 13 cases, of which 1 was successful. The lymph, which has been obtained from the municipal vaccinator, who has attended the hospital weekly, has been generally good, and the vesicles characteristic.

General Health and Physique of the Men.

27. The general health of the regiment during the year has been, in my opinion, very good. On first arrival at Sholapur many of the men were in a very anœmic and cachectic state, with a marked scorbutic taint, especially those who had been on detachment duty at Janjira, where they had suffered severely from fever; but the change of climate, and the cheapness and abundance of good, wholesome food, and especially of vegetables, has been attended with most satisfactory results, and at the present time I consider the men of the regiment, as a whole, to be in excellent health, and fit for any work that may be required of them. At the present moment there are only 17 men on the sick list out of a strength of 685 men.

Treatment of Disease when special.

28. On this head I have but little to say, the only case in which I have pursued any unusual or new mode of treatment being a case of cholera, in which I tried the subcutaneous injection of hydrate of chloral, recommended by Surgeon Hall, R.A., as detailed in the *Bombay Government Gazette* for 26th February last, pp. 161-163. The man, when I first saw him, was in a state of moderate, but not extreme, collapse, the surface of skin and tongue were cold, and there were constant cramps, with suppression of urine, frequent vomiting and purging, the dejecta being of the characteristic rice-water nature. I had not the *Government Gazette* by me at the time; but, trusting to my recollection of what I had read some time before, I had a solution of ten grains of chloral in 100 minims of water prepared, of which I immediately injected 10 minims under the skin of one arm near the insertion of the deltoid. The effect of this first injection was almost instantaneous. The cramps ceased, the man—who had been previously constantly

changing his position—became quite quiet, and in a few minutes fell fast asleep. This sleep lasted a quarter of an hour, or rather more, when the cramps and uneasiness returned. A second injection was then made, and they were continued at short intervals for about 1½ hours, until the whole quantity (100 minims) had been injected, when the man's state had so much improved that I considered him out of danger, and left the hospital, having instructed the hospital assistant to recommence the injections should any bad symptoms occur. Suffice it to say, that the man from that time made steady progress towards recovery, there was no secondary fever, no abscesses or other trouble at the seats of the injections, and no further medicine was required except tonics, the man's health having been below par when he was attacked. It may, of course, be said that this was a solitary case, which might very likely have recovered under any other or no treatment; but all I can say is, that it was a well-marked case of cholera, that the effects of the treatment were immediately apparent, and that from what I saw of these effects I shall have no hesitation in pursuing the same line of treatment should further cases of cholera unhappily fall under my notice.

A great many of the fever cases occurring at the end of the year have been treated with sulphate of cinchonidine, and with good results; but as this treatment will form the subject of a special report hereafter, it need not be further alluded to here.

Special Observations.

29. Having entered into detail, as fully as seemed to me called for, on all the previous headings, I have no special observations to make.

Resumé of the whole.

30. In concluding this report I would beg to call attention to the necessity that, in my opinion, exists at Sholapur for additional hospital accommodation, including an extra ward for general use, a detached ward for contagious or special cases, a dead-house, and a bath-room. As regards the lines, I would recommend the construction of an additional well, so situated as to be free from all chance of contamination by the drainage from the lines percolating through the ground into the water. The present water-supply has not yet, so far as I am aware, been analysed; but I fear that an analysis, when made, will reveal the presence of organic matter in some quantity. At the same time it is but right to say that no complaint has been made of the quality of the water by those using it, nor has any sickness occurred that can, in my opinion, be referred to the use of it. Except for these wants I consider the regiment to be very well provided for, and likely to improve in health and physique from the change from the moist relaxing atmosphere of Bombay to the dry and more or less bracing air of Sholapur, which from my one year's experience of it I consider to be a much more pleasant and healthy station than it has the reputation of being.

31. I have further to state that I have had no special days fixed for instructing the native medical pupils, but they have been in the habit of showing me every morning a copy written by them on some professional subject on which I have examined them, and I have also taken frequent occasion to instruct them when visiting the wards.

H. M.'s 13th Regiment N. I.

AHMEDNAGAR.—In medical charge of Surgeon-Major TICEHURST; Strength, 613.

Station.

1. Ahmednagar.

Detachments.

2. At Párner, Ráhuri, Kopargaon, and Sangamner.

Topography and Physical Geography.

3. The cantonment of Ahmednagar is 126 miles distant in direct line from the open sea, and at an elevation of about 1,900 feet above it. It is 70 miles from Poona and 33 miles from Sirur in a N.E. by E. direction, and Málegaon is N. ½ W. from it at a distance of 100 miles

The mean annual temperature is 72·3

The mean rain-fall for the last three years has been 29 inches 45 cents. The cantonment occupies four square miles of ground, lying close to the east and south sides of the town of Ahmednagar, from which it is separated by the city wall. The ground falls from the city to a large water-course called the "Bhingar Nallah" that runs south-west towards the "Sina" River, and nearly equally bisects the cantonment. The surface again rises a little towards the site of the European barracks south of the nallah.

Soil. The surface soil is mostly regur, or stiff and retentive black earth. The subjacent trap-rock, however, on its disintegrating gravel appears at the surface at the north-east end of cantonment, and the low ridge on which the European barracks towards the south end are built, is somewhat gravelly. Near the eastern limit there is a gravelly surface in the neighbourhood of pits that are dug to obtain kunker, or concretionary carbonate of lime.

Water. There is the River Sina, which in the rains is sometimes pretty full, but for the greater part of the year is dry.

Drainage. The natural drainage is generally good, there being a fall from the highest and most western part towards a water-course west of the city, and from the rest of the north-western half of the cantonment the fall is towards the "Bhingar Nallah." The south-eastern part, on which are the lines of the European troops (2nd Queen's) and the Sudder Bazaar, is drained partly into the Bhingar Nallah and partly into a water-course that runs nearly parallel with it, and further south. The brigade parade ground is somewhat uneven in surface; both the brigade and regimental parade grounds become full of holes during the rains.

Effects on Climate. 4. The above topographical conditions have a favourable influence on the climate, which is dry, and very free from malarial influences. The climate is undoubtedly favourable to the health of Europeans. In the hot weather, which commences in March and lasts till June, there are some very hot days; but, generally speaking, the nights and mornings are cool and refreshing.

The rains are delightful. The rain falls in showers, and the roads quickly drying up there is seldom a day in which one is unable to take his accustomed exercise.

In the cold weather the climate is more trying, the variations of temperature being frequent and great, and favourable to the production of colds and chest affections in the weak and delicate.

Lines. 5. The 13th N. I. lines are situated on the highest part of the cantonment and on dry ground, consisting of moorum or the gravel of disintegrating trap through which the rock here and there protrudes; there is a fall in ground in front and rear. The lines, which are built on the new standard plan, were commenced by the 14th Regiment N. I., and completed by the 16th Regiment N. I.; they are in a good state of repair. The streets are wide and roomy, and trees are planted on either side; there are a good many small gardens. The huts are built on *plinths*.

The cubic space is a follows:—

Native Officers' Houses.

		Superficial Area.	Cubic Space.
One room.	...	166 feet.	1,784 feet.
Do.	...	157 „	1,923 „
Do.	...	77 „	943 „
Cook-room	...	97 „	796 „
Verandah (enclosed)	...	19 „	152 „
Do. do.	...	38 „	304 „
Bath-room	...	41 „	328 „
Necessary	...	36 „	288 „
Back verandah.	...	86 „	688 „

Non-Commissioned Officers' Houses.

		Superficial Area.	Cubic Space
One room	...	120 feet.	1,470 feet.
Verandah, enclosed	...	67 „	536 „
Do. do.	...	63 „	504 „

Private (single).

One room	...	98 feet.	1,164 feet.
Verandah, enclosed	...	35 „	280 „

Privates, Married.

One room	...	113 feet.	1,384 feet.
Verandah, enclosed.	...	49 „	392 „

The ventilation is very fair.

Neighbouring Villages. There is one village, viz., "Bhingar," which is about three miles east of the lines. The city is close to, separated by a high wall.

Bazaar. Is a small one to the west of the lines. There are 14 private houses and 10 shops. The population is 100.

Drainage. All surface drainage; no under-ground drainage.

Tanks. None.

Conservancy and Sanitary Arrangements. 6. This has been very satisfactory, and no reference has been necessary in any of my reports.

Water-supply. 7. This has been ample in quantity and of good quality; it is supplied from the "Kapurwadi" Aqueduct by under-ground conduits.

Food. 8. Grain, vegetables, fruit, beef, mutton, chicken, and fish are procurable. The quality is generally very good, and abundant and cheap.

Clothing. 9. Is uniform,—cloth coats and serge trousers. Native dress is made of cotton.

10. The ordinary duties of a native regiment are parades morning and evening, line guards, and regimental guards. They do not appear to have had any unfavourable influence on the health of the men.

Exercise, Amusement, and Occupation. 11. During the drill season the men have plenty of exercise in attending the various parades, morning drill, judging distance and musketry. There is a good gymnasium, which also affords exercise and amusement. Some of the men are really good gymnasts.

Lock-up Rooms and Cells. 12. There is only one lock-up room in the quarter-guard; there are no regimental cells; there are cells in the fort, about a mile from the lines, which are used when required.

Marches. 13. There were none during the year.

14. The hospital is a very good building; it faces the parade ground, and is close to the lines, too close in fact. The compound is enclosed by a prickly-pear hedge. This, in my opinion, ought to be removed, and a low wall put up in its place.

15. The ventilation is very good.

16. There has been no over-crowding.

17. Accommodation has been ample. A new bath-room has been built during the year.

The floor of the hospital should be of stone and not earth. This improvement has been sanctioned, I believe.

Conservancy. 18. The tank-cart system and dry earth. Carbolic acid in solution is also used when necessary.

Hospital Water-supply. 19. The supply has been abundant and of good quality, supplied from the Kapurwadi Aqueduct.

Sickness, Mortality, and Invaliding. 20. The amount of sickness has been small, although somewhat greater than in 1873, the number of admissions having been 527 from an average strength of 613, against 488 from a strength of 622·0; but the average number of daily sick has been rather less, being 15·7 against 17·0.

Of the 539 treated, 12 were remaining in hospital on the 31st of December 1873, and 527 were admitted: 524 were discharged to duty, 4 were sent on sick certificate, and 11 remained under treatment.

Prevailing Diseases Have been—febricula 123 admissions, ague 23, catarrh 17, chronic rheumatism 20, lumbago 9, bronchitis 13, dysentery 6, diarrhœa 10, colic 24, boils 28, and contusions 52. No case of hepatitis occurred. The admission from syphilis has been very small: only one case of hard chancre. Four cases of soft chancre were admitted; this favourable result is owing, I think, in a great measure to the extension of the Contagious Diseases Act to a radius of three miles round cantonment. This takes in the city.

Conjunctivitis prevailed during the greater part of the year, 87 cases having been admitted.

Mortality. No death occurred during the year, either in or out of hospital.

Invaliding. Thirteen men were invalided—8 by the usual Annual Invaliding Committee and 5 by a Special Invaliding Committee.

Influence of Rain-fall. 21. This has had no unfavourable influence on the health of the men.

Vaccination and Revaccination. 22. Vaccination has been regularly and successfully performed; the number of primary was 88. Revaccinations were 17.

General Health and Physique of the Men. 23. The general health of the regiment on the whole has been extremely satisfactory as shown by admissions, not a single death having occurred at Ahmednagar in the regiment; but as regards the general physical condition of the men, there are some men who appear weakly, and who often fall out while on parade on account of giddiness—shortness of breath. The cause, I think, lies in the men themselves, who live on bad and unsuitable food for the sake of saving their money and sending it to their country; and, again, another cause is the number of relations and friends that are constantly coming on a visit, and who live on the unfortunate sepoy.

Special Observations. 24. I am afraid there is little of interest in the medical part of my report, for no cases of real interest have actually occurred.

In conclusion, it is a source of great satisfaction to me to be able to report so favourably on the health of the regiment for the past year. I should be very glad if something could be done with regard to dieting the sepoy while in hospital; I should also like to see a better system of invaliding adopted, so that malingering, which so largely prevails in the Native Army, might be done away with.

I only had one medical pupil attached to the hospital for a part of the year. He used to receive instructions from me, three or four times a week, in English reading, dictation, arithmetic, writing, materia medica, medicines, and surgery as well as elementary anatomy.

H. M.'s 5th Regiment N.L.I.

BELGAUM.—In medical charge of Surgeon-Major H. DAY: Strength, 575.

1. This regiment remained in Belgaum during the year.

Detachments. 2. A detachment, consisting of 90 men under a subedar, to Kaládgi from 26th March to 24th November 1874.

Topography and Physical Geography. 3. Belgaum is situated in latitude 15°51′ north, longitude 74°35′ east, is from 55 to 60 miles from the sea-coast, and from 15 to 25 miles from the Ghât range as the crow flies, the line of the Ghâts being very irregular. It is 2,100 to 2,260 feet above the sea-level. It is surrounded, but at some distance, with low hills, the general surface being very uneven. Its aspect, although not marked, must be considered easterly.

Soil Is for the most part laterite, with a few patches of black soil, and here and there high peaks of trap upheavals, such as Yellurgarh and Kattemuddi, to the south and west.

Water. The average rain-fall is about 50 inches. The water in and around Belgaum is obtained from wells, and there is always sufficient, the water being for the most part of good quality. The laterite soil is a good natural filter. The best water in the cantonment is obtained from a well near the new church; during the hot months the distribution from this water has in a measure to be restricted.

Drainage. Is easterly; the water is carried off by nallahs to the rivers Ghatprabha and Malprabha, which discharge into the Krishna. There are no lodgments of water of any size causing marshes or natural lakes near Belgaum; there are but few bunded tanks, but there is, however, one of some size to the east of the town which never becomes absolutely dry.

Effects on Climate. 4. From its proximity to the sea, elevation, and heavy rain-fall Belgaum is a very cool station, and I think it might be looked upon almost as a sanitarium for the Bombay Presidency; but its value is neutralized in these railway days by its being so much out of the way.

The south-west monsoon sets in early in June, when, of course, the hot weather is at an end. The temperature during the rains is low, and from the elevation above the sea the climate is never oppressive.

The fall of rain is very heavy, sometimes in a short space of time; but there are, however, a great many rainy days. This year rain fell on 125 days from April to November. There is often a constant drizzle, which is very annoying, and sadly at times interferes with out-of-door sports. From the proximity to the Ghâts, and being within, to a certain extent, the influence of both monsoons, the electrical changes are great. In April and May there are very frequent thunder-storms which cool the air, so that in most years the latter part of February and March is the hottest and most unpleasant time of year. But even at this time of year the sea-breeze sets in early, and woollen clothing is advisable. In fact, most people on coming to this station find it advisable to discard all kinds of cotton and linen clothing during the greater part of the year. The station is well wooded, but the country surrounding is rather bare; it is too far from the North Kanara jungles to be injuriously affected by malaria. There is but little cultivation in the immediate neighbourhood of Belgaum; what there is, is chiefly rice, followed by the usual winter crops. The fields lie chiefly to the east and south; the rest of the land is covered with grass, which is cut when well dried after the monsoon, and stacked in January.

The prevailing wind must be considered the south-west, which is a sea-breeze; during the cold weather easterly winds prevail, which many people find dry and unpleasant, but I am not aware that, beyond causing catarrhal affections, they are injurious.

Lines. 5. The lines now occupied by the 5th N. L. I. were built by them in the years 1864 and 1866 inclusive; they are commodious, and far superior in appearance and size to the old style of Native Infantry hovels. They only cost Rs. 11,540; they are situated to the west of the town of Belgaum, and are distant about half a mile from the camp bazaar. They are on a sloping ground with a southerly aspect, and cover a space of ground of 358 yards by 230 yards: there are garden plots on each flank of the lines and also before each pendall, with plantain trees, &c., in them. The main street dividing each wing is 140 feet wide. The side streets at right angles are 2; each wing is again sub-divided from front to rear by 2 streets 46 feet wide, so that each pendall has a road all round it. Each pendall is divided into separate rooms, and each sepoy has allotted to him 1,626·7 cubic feet. The number of persons living in one room is very varied, in one room I found 8 people—a sepoy, wife, and 6 children.

There are 32 pendalls and 16 native officers' houses; they are in good repair. They are built on plinths, which vary, according to the slope of the ground, from 6 inches to 3 feet.

Ventilation. Is by means of openings in the roof and by air-holes in the walls; but, as these are usually kept closed, it seems superfluous to mention them. The doors are made of bamboos, and air must pass through them easily: so there must be free cross ventilation between the doors and roof.

Bazaar. The regimental bazaar is situated in rear of the lines, and consists of 52 huts and occupies 370 by 172 feet; the nearest hut is 143 feet distant from the nearest pendall in the lines.

Neighbouring Villages. There are none near enough to affect the lines in any way.

Drainage — Is all surface by open ditches, which carry off the water to the Naghgiri Nallah.

Tanks. — There are none near the lines, but during the south-west monsoon there is some marshy land to the south-east of the lines. Rice cultivation is carried on in a few fields to the south-west of the lines, the nearest field being 278 feet to the nearest part of the lines. Between the race-course on the Vingorla Road and the cantonment of Belgaum there is some black soil which in the monsoon is very marshy; this, I think, in conjunction with the rice-fields, may in some measure cause the fever in the regiment.

Conservancy and Sanitary Arrangements. — 6. Conservancy is carried on by means of latrines situated at the rear of the lines; the night-soil is carried off in iron carts to the yards outside the cantonment; the latrines are kept well washed out with lime, and are very clean.

Water — 7. Is supplied by five wells, and they are a long way from any cesspools or grave-yards, and are not liable to become contaminated with typhoid or choleraic discharges. Some of the sepoys drink the water of a natural spring called the Naghgiri. An analysis of the one well-water was made by Surgeon-Major Rogers, and is as follows :—

Grains per Gallon.			In Clarke's Degrees.		Parts per Million.	
			Hardness.			
Total Solids.	Loss on Ignition.	Chlorine.	Total.	Permanent.	Free Ammonia.	Albumenoid Ammonia.
9·80	2·80	1·95	5°·32	1°·50	·06	·35

Physical Character.

Colour.	Smell.	Taste.	Re-action.
Clear, transparent.	Nil.	Nil.	Neutral.

Quantitative Examination of Concentrated Water.

Re-action.	Free Carbonic Acid.	Sulphuric Acid.	Nitric Acid.	Nitrous Acid.	Sulphurated Hydrogen.	Chlorine.	Iron and other heavy Metals.	Lime.
Neutral.	Nil.	Nil.	Present.	Nil.	Nil.	Present.	Nil.	Present.

Sediment, consisting of a small quantity of vegetable *debris*. High class of animal life absent.

The water is at present 16½ feet to 19½ feet from the surface, and there are 9 feet of water in the wells; there is never an absolute want of water, but in a very dry season it gets rather scarce.

Food. — 8. All kinds of food are well supplied in the bazaar. With reference to cheapness, this must always be a relative term, as it must vary in each individual sepoy's case as to whether he is in debt or not, how many mouths

he has to feed, and, if an up-country man, the kind of food required to keep him in health. The highest rate paid by Government for dearness of provisions during the year has been, for sepoys, 11 annas, the lowest rate 1 anna and 11 pies. This will probably be the best test of the dearness or cheapness of provisions.

I think the sepoy is for the most part much under-fed; he usually has many calls upon him which we know nothing about. Recruits, for instance, only get Rs. 5 a month, Rs. 2 being deducted for kit; he has to work hard on this allowance to learn his drill. I have a patient, a recruit, in hospital now who has been half-starved; he is in debt to the extent of Rs. 13, and has to keep a wife and two children: so that he has had available cash about Rs. 3 to feed four mouths.

Clothing.

9. This has been the ordinary clothing of sepoys, but in the hot weather the men wore, their white cotton clothing issued to them in Aden. I think that socks should be added to a sepoy's kit. We have adopted the European boot, which is not very successful, if one may judge from the numbers of shoe-bite cases occurring; a little extra marching always increases them to a rather alarming extent.

Duties.

10. They have been light during the year. The musketry course was late, and entailed a good deal of exposure to the European officers, but this year it has been commenced early, and will be over before the hot weather.

Exercise, &c.

11. I do not know that much can be said under this heading. Probably the exercise taken by a sepoy, other than entailed by military duty, consists in walking backwards and forwards to the bazaar; some of the men, about 5, work in the regimental garden, and 92 others in the workshop. The amusements must be said to be almost nil. On enquiring I am told that they chiefly consist of country music at night. The *occupation* has been that of their ordinary military duties, with the exception of making butts for rifle practice.

Lock-up Rooms and Cells.

12. There are two cells and one guard-room; the cells are 21 feet by 8 feet 3 inches, cubic capacity 1,256 cubic feet; the guard-room is 30 by 20 feet, cubic capacity 7,650 cubic feet.

Marches.

13. With the exception of the Kaládgi detachment there have been no marches.

Hospital.

14. The hospital and its out-buildings is situated in a triangular compound containing about 11,614 square yards; it is 220 feet distant from the hospital of H. M.'s 6th Regiment. N. I. The hospital ward is 96 feet long, 22 feet broad; the cubic contents being 27,456 feet. The verandahs are on three sides, and 10 feet wide. A small portion, 13 feet and 9 inches long, of the rear verandah is cut off to make a room; at the north-east end there is a dispensary and store-room, 8½ feet wide, 31 feet long, which is, in fact, an enclosed verandah.

In the compound of the hospital there are a number of trees planted by a former 1st Hospital Assistant, Mr. Raggoojee Patkur, of the 9th Regiment N. I.; they give a very grateful shade, and are useful to the men who cannot eat in the hospital.

Ventilation

15. Is through the roof by means of three round ventilators, which, however, have to be kept closed during the rains; the windows are opposite each other, and there never has been any difficulty in keeping up free ventilation. My anxiety is chiefly to protect the patients when suffering from fever, &c., from cold currents of air to which they in their own houses have never become accustomed to.

Over-crowding.

16. There has been no over-crowding during the year.

Accommodation.

17. This is, I think, for ordinary occasions sufficient; but one great exception must be made, and that is the want of a ward for infectious diseases. The only place at present is the small verandah room. Some of the children had chicken-pox during the year, and the want of a proper place to put them in was much felt. In case of an epidemic of cholera or small-pox prevailing, tents would have to be pitched; but in the rains, if not impossible, the exposure would be very injurious to the patients.

A covered way is also required to the latrines and cook-room.

The recommendations I wish to make are: firstly, a contagious-diseases ward to be built; secondly, covered ways to the latrines and cook-room.

Conservancy

18. Is by means of latrines in rear of the hospital, 101 feet distant; they are cleaned out twice a day, the night-soil being taken to yards outside the station. The latrines are kept free from smell by the use of lime, carbolic acid, and McDougall's powder.

19. The hospital is supplied by a well in the compound. The water is, at this time of the year, 46 feet from the surface of the ground; the water is good, and unlikely from its position to become contaminated. In a very dry season the water in this well gets scanty, when water has to be brought from the lines.

Hospital Water-supply.

Sickness, Mortality, and Invaliding.

20. The daily average has been 13·7. There have been 162 admissions under head of ague, and two deaths.

The cases of ague are not in themselves, as a rule, very severe, but from the scorbutic debility of the men there were often more or less internal complications. Of the two fatal cases one man had albuminuria, and died delirious; he suffered from scurvy in Aden and here: the other man died from congestion of lungs; he also had suffered from scurvy. There have been no cases of dysentery or hepatitis.

Chicken-pox. There were 8 cases, for the most part recruits, but many children had it who are not shown in the return; the cases were none of them severe.

Chronic Rheumatism. There were 16 cases; the scorbutic taint will account for many of these, and I am inclined to think that dengue fever often seems to leave behind a tendency to rheumatic pains of the limbs.

Syphilis. There has been only 1 case admitted under the head of primary; this is very satisfactory, and shows the use of the lock-hospital. The 7 cases under the head of secondary syphilis are relics of former years.

Scurvy. There have been 24 admissions, but many men have been treated out of hospital.

General Dropsy. A man came in into hospital with œdema of the legs; there was no apparent cause, and a few doses of scoparia cured him. The man was ill in June, and has remained well since.

Lumbago. There have been 15 admissions, under this head, due to former scurvy and dengue, the men getting cold on guard.

Paralysis. Is probably syphilitic. A man came in who had lost considerable power over the right limbs, and who had a curious hesitation in his speech. A short mercurial course, combined with iodide of potassium, confirmed the diagnosis, as it soon cured him.

Conjunctivitis. The cases under this head have been 13; they have not been severe, and have probably been caused by the smoke of fires.

Heart Disease. One case of disease of the mitral valve has been treated; the man has since been pensioned.

Aneurism Aorta. One man was admitted twice under this head. I took him before an invaliding committee, and he has been pensioned.

Pneumonia. This was rather a severe case, but the man has recovered and gone to duty. There have been no cases of phthisis.

Dyspepsia. Of this there were ten cases—due, no doubt, to the debilitating effects of Aden, and bad food.

Hernia. There was one case of inguinal hernia; the man was pensioned.

Colic. There have been 19 cases, for the most part caused by dall, mangoes, and jack-fruit.

Gonorrhœa. There were 6 cases, most of them old chronic cases, more of the nature of gleet.

Abscess. There have been 7 admissions; 2 of them were severe cases of diffused abscess, and were probably caused by dead guinea-worms; they both did well.

Guinea-worm. There are four cases recorded; the men had all been away from Belgaum. I seldom see a case which can claim Belgaum as its birth-place.

Burns and Scalds. Were all slight, generally caused by hot ghee.

Contusion—Leg. Thirty-four cases; of these the greater number are shoe-bite cases. The causes have been referred to under the heading of clothing.

Mortality. There have been only 3 deaths—2 ague and 1 suicide.

The suicide case was rather remarkable. The man fixed his rifle in a recess in the wall, fastened a string to the trigger, and shot himself at the pit of the stomach. I heard that the proverbial woman was the cause.

Invaliding. Fifteen men have been invalided during the year from the following causes:—Ague 1, chronic rheumatism 1, syphilis—secondary—1, scurvy 1, valve disease—mitral—1, aneurism aorta 1, asthma 1, bronchitis 1, dyspepsia 1, hernia—inguinal—1, debility 4, and old injury to finger 1.

Principal Causes of Sickness. 21. The principal causes of sickness were, 1st, a scorbutic tain in the men; 2nd, the rice-fields and black-soil marshy ground before alluded to.

Principal Causes of Mortality. 22. The same causes hold good in mortality as in sickness.

Mortality according to Race. 23. Both the men who died were Mahrattas: so the percentage of death is 0·40.

The suicide case was a Purwarree; percentage 0·20.

Influence of Rain-fall. 24. The rain-fall was 62 inches and 50 cents, which fell in the months from April to November; this is a heavy rain-fall for Belgaum, and caused chest complications in the ague cases.

Epidemics. 25. With the exception of chicken-pox, which is hardly worth mentioning, no epidemic has occurred.

Vaccination 26. Has been carefully attended to, the lymph being good. There has been no revaccination. I am of opinion that nothing short of compulsion would make the practice common.

General Health and Physique of the Men. 27. I cannot say, I think, this is very satisfactory, but I shall refer to this again in the *resumé*.

Treatment of Disease when special. 28. Under this head I can only refer to cinchonidine; and the average stay in hospital was four days under cinchonidine in 18 cases, and 4·8 in 18 cases under quinine treatment.

But I must add that the quinine cases occurred in the rainy season, and that in the severe cases I have not felt justified in withholding a well-known and tried remedy like quinine.

Resumé of the whole. 29. To understand the state of health of a regiment, and the conditions affecting it, it is necessary to consider its antecedents for some years.

In the years 1860, 1861, 1862, and 1863 the regiment was on service in China; during the time they suffered severely from cold. On its return a large portion of the regiment had a long sea voyage, which told heavily against the non-cooking men. On its return from China the regiment came to Belgaum, and had to build lines; this kind of labour tells severely on the men, more especially in the case of this regiment, as the lines were built at a time when provisions were very dear, so that they had hard work on a short supply of food. The men were much exposed to malaria while cutting wood in the jungles.

In 1868 the regiment went to Abyssinia, and, although not landed there, the non-cooking men had a month of privation. They returned to Belgaum, and in 1870 went to Aden. Here the regiment was very unhealthy, so much so that I believe at one time the General Commanding was on the point of requesting that it should be relieved.

Dengue fever broke out, and of this fever there were 354 admissions into hospital. During the two years the regiment was at Aden, there were 24 deaths from all causes.

That easily preventible disease—scurvy—played its usual part in destroying the health of the regiments which go to Aden. I was only a short time at Aden. I found the antiscorbutic

value of the rations was almost nil, and that the lime-juice issued, with which we were expected to cure this disease, was some vile compound, probably concocted in the bazaar of Bombay. I had some sent to the Chemical Analyser to Government, who reported it unfit for issue. The regiment was sent over to Aden in sailing ships; the voyage lasted three weeks, a very bad preparation, as far as the non-cooking men were concerned, to enable them to ward off scurvy. A most important factor at work in causing this disease is that the men have their families with them, so that the rations are made to feed a great many more people than was ever contemplated. If the relief of Aden could be made once a year, the men leaving their families in India, I think it would be very beneficial: care, however, would have to be taken that they did not sell their rations. Some years ago I witnessed a field day at Singapore; the men of a Madras regiment had about three miles to go, and they became so exhausted that they were lying about the road in twos and threes for about two miles: so many men fell out, that a report was spread about that they had been poisoned by the Chinese. On enquiry it seemed most probable that the men had been selling their rations, food of all kinds being exceedingly dear at Singapore; the temptation to the sepoy of putting by a nest-egg was too great. I mention this, as I believe, if regiments went to Aden without their families, to obtain good results great watchfulness would be required to prevent them following the Singapore fashion. When in the Indian Navy I saw a great deal of trooping, and we always carried the sepoys on deck without any detriment to their health. If the men were sent without their families and arms as deck passengers in the numerous steamers now running to Aden, I believe that the Aden relief could be made every year with economy, and I am sure with great benefit to the health of the men. I mention all this about Aden, as I consider the last two years here to be years of recovery from the debilitating effects of scurvy acquired at that station. It must be remembered that, if one man shows marked symptoms of scurvy, that many others will probably be slightly affected. I rejoined the regiment soon after its return from Aden, and I was struck with the parched-up, wire-drawn appearance of the men, very different from the 6th N. I.; and it was plain, even to an unprofessional eye, that the standard of health in the two regiments was very different. During the last two years I think that the men have much improved in appearance, but I do not consider they have yet reached a good condition of general health and physique; and if they went to an unhealthy station, or were exposed to hard work on a campaign, the sick list would undoubtedly be very large.

30. I have kept no record of how often during each week the pupil has been instructed by me and in what subjects; he has had, however, the privilege of attending the class daily held by Surgeon-Major Rogers.

H. M.'s 6th Regiment N. I.

BELGAUM.—In medical charge of Surgeon-Major ROGERS; Strength, 631.

Location and Movement of Troops.

One complete company of the regiment arrived in camp from Kaládgi on the 10th April 1874, and from that date the whole of the regiment, with the exception of the few men away on sick leave or furlough, has been at head-quarters here.

Topography and Physical Geography.

The military station of Belgaum, in the Southern Mahratta Country, is situated in latitude 15° 52′ N. and longitude 74°42′ E. *North* of it, and distant about 70 miles, is the military station of Kolhápur; to the *south* of it, about 48 miles, the station of Dharwar; whilst to its *east*, and distant some 74 miles, is the station of Kaládgi; and *west* of it, by the Parpuli Ghât route, about 78 miles distant, is the sea-port of Vingorla. By direct line Belgaum is about 50 miles distant from the sea, and it enjoys an elevation computed at about 2,200 feet. Though occupying, relatively, a high position, the camp, city, and fort of Belgaum are situated in a sort of basin, and surrounded by a range of undulating hills of various elevations. The Márkándeya River flows near to the station about three miles from S.W. to N.E., and, besides this, there is a large nallah, tributary to, and flowing parallel with, the Márkándeya, about two miles south-east from the station.

Geology.

The geological formation met with in and around the station is chiefly, though not exclusively, *laterite*. In many places there are quite thick beds of it, several quarries of it exist in the neighbourhood, and most of the houses and buildings in the station are constructed with this stone. In some places,

layers of more recent lateritic conglomerate are met with. Here and there, in and about the station, trap-rock is found under the laterite, and in some places this formation rises into hills with rounded summits, at the top of which the trap is dark, compact, and basaltic in character, and during the rains is often covered by a dark spongy mould. A reddish brown earth or clay is often met with on the surface, and in the valleys the common heavy black soil abounds.

Water.

The water-supply is abundant, and the quality good; it is obtained almost exclusively from wells; and, as many of the wells are sunk through a laterite formation, it is a matter of surprise that no trace of iron could be detected in the water analytically examined; as veins of manganese, associated with iron, have been discovered in the laterite formation here. An analysis of some of the water is herewith forwarded:—

Analysis of the Water used by the Sepoys of the 6th Regiment N. I.

Grains per Gallon.			Hardness, according to Clarke's Degrees.		Parts per Million.	
Total Solids.	Loss by Ignition.	Chlorine.	Total.	Permanent.	Free Ammonia.	Albumenoid Ammonia.
14·00	2·80	2·95	5°39	2°59	0·05	0·21

Physical Characters.

Colour.	Smell.	Taste.	Re-action.
Faint opaque.	Earthy.	Earthy.	Neutral.

Quantitative Examination.

Re-action.	Free Carbonic Acid.	Sulphuric Acid.	Nitric Acid.	Nitrous Acid.	Sulphurated Hydrogen.	Chlorine.	Iron and other heavy Metals.	Lime.
Neutral.	Nil.	Nil.	Present.	Slight.	Nil.	Present.	Nil.	Present.

Drainage.

The cantonment lies to the west of the town and fort, and has an area or extent of very nearly 1,300 acres. The surface presents numerous undulations—the line of drainage running generally from the W.N.W. to E.S.E. The drainage of nearly the whole camp is towards two nallahs which run south and east, and unite at the south-east angle of the camp limits, beyond which they discharge themselves into the rice and other fields lying between the camps and the town and village of Sháhápur and Hasur, and ultimately away into the low-land lying south and south-east of the camp, town, and fort. One part of the station out of camp limits, in the vicinity of the jail, which stands on high ground to the N.E. of the camp and town, drains into a small valley close to the northern entrance to the fort during the monsoon, and for a few months after the rains this valley is converted into a small lake, which gradually vanishes, and by the end of March the valley becomes empty, or nearly so. The physical conformation of the ground on which the camp is situated, and the geological formation it is composed of, provide an excellent natural drainage, which is very fairly supplemented by surface drains, and leave little more to be desired.

Climate.

As regards the climate, the soil, or rather the geological formation of the station, exercises a decidedly salubrious effect upon it.

The laterite formation admits of a ready percolation of the rain supply, and prevents any large accumulations of water; the atmosphere, however, is often chilly, and through the monsoon season, and for a few months after it, the air is very damp as well as chilly. On the whole the climate is very variable and very trying, especially during what is termed the "cold season," *i.e.*, from November till the middle of February, during which time a cold, east and north-easterly wind prevails, causing much sickness, rheumatic and neuralgic affections, more or less derangement of all the abdominal viscera—especially the liver, catarrhs, and pulmonic affections, and malarious fever.

Epidemic diseases are but little known in Belgaum, save rubeola and variola, and these generally appear in a very mild and somewhat of a sporadic form. The variation in temperature is considerable during the year, especially in some months. In the early morning, between 4-30 and 6 A.M., in the months of December and January it is as low as 55°, whilst in the months of April and May, and at the same hour, it will be up to 75°, but displaying a somewhat less striking variation during the other hours of the day and the other months of the year. The south-west monsoon commences generally early in June, sometimes before, and continues to the end of October, and for those five months heavy masses of clouds gather round the station, attracted by the neighbouring hills; the rain falls heavily and often continuously, the atmosphere becomes laden with moisture, and much discomfort prevails. The average rain-fall is 52 inches; last year (1874) it slightly exceeded 62. I consider the months of February, March, April, and May, though far from the coolest, the healthiest of the year, and that the salubrity which Belgaum is somewhat noted for, is attributable, in a great measure, to the nature of the soil, the geological formation, the excellent drainage, and the influence, for several months of the year, of the refreshing sea-breeze. A meteorological record for the year is herewith forwarded:—

Meteorological Record for the year 1874.

Months.	Number of Wet Days in each Month.	Rain-fall.			Temperature.			Directions of prevailing Winds.
		Inches.	Cents.	Total.	Max.	Min.	Mean.	
1874.				In. Cts.				
January	...	...	...	...	83	47	65	E. & N.E.
February	...	...	...	...	88	51	69	E. & N.E.
March	1	...	4	0 4	94	55	74	W.
April	4	...	75	0 75	96	53	74	W.
May	10	4	91	4 91	93	44	68	W.
June	26	14	65	14 65	80	52	66	W. & S.W.
July	26	18	4½	18 4½	81	56	68	S.W. & W.
August	26	7	6	7 6	81	56	68	W. & S.W.
September	24	9	67	9 67	82	56	69	W.
October	15	6	52	6 52	85	55	70	W.
November	2	1	20	1 20	81	52	66	E. & N.E.
December	...	...	...	...	81	52	66	E. & N.E.
Total...	134	62	84½	62 84½				

The average depth of surface water is 18 feet.

The station is moderately well wooded, except at the site of the new barracks and the ground lying north and west of them. The new artillery barracks are particularly exposed to both the cold, damp, westerly wind of the monsoon and the north and north-easterly wind of the cold season.

Lines.

The Native Infantry lines are situated in about the worst locality in the camp, on the extreme south-east border of the cantonment. Those of the 6th Regiment N. I. are built on the end of a very sloping ridge running from the N.W. to the S. E.; at their rear is a large nallah, during the monsoon carrying a large volume of water, which finds a resting place in a sort of marsh and the rice-fields, about 100 yards to the south and south-west of the lines.

Available Space.

The area on which the lines are built, occupies about 1,000 feet by 900, or thereabouts, and is situated, as I have said, on a very sloping ridge running from the N.W. to the S.E., and the pendalls or rows of huts extend transversely across this ridge; the accompanying plan will convey a very accurate knowledge of the arrangement. The whole of the lines are traversed by two fine wide streets extending from north to south and from east to west; they run, of course, at right angles to each other, are respectively about 54 and 37 yards wide, and form in the centre a fine open space. The huts are built of sun-dried bricks and laterite, the latter being used chiefly for the foundations and gable-ends of the houses, so as to keep out the wet and damp of the monsoon. Each block is built on a plinth, which varies in height from 1 foot to $3\frac{1}{2}$ feet. The lines consist of 4 blocks, 2 on the left flank and 2 on the right, each block consisting of 8 (double) rows of huts, as is well shown in the plan.

Ventilation.

Each pendall or row of huts is really double, being divided into two sets, or rows of dwellings, by a central wall supporting the roof, on the back to back arrangement. The pendalls are separated by streets about 15 yards wide, and in front of the houses—a space of about 10 feet wide—rose-bushes, shrubs, and plantains are cultivated. The ventilation is quite satisfactory. Doors, windows, and a ventilator (in the roof-ridge of each block) afford ample ventilation. The cubage varies according to the number of inhabitants, but for the most part it is sufficient—in the unmarried quarters over 1,750 cubic feet, with a superficial area varying from 110 to 142 feet for each person The lighting is very defective.

Bazaar.

The regimental bazaar is situated a short distance behind the lines, and consists of a few shops—a butcher's, a grain-seller's, a vegetable-vendor's, and a milk-man's; besides which there are the houses of the chowdri, the bazaar pattah-wallahs, tailors, barbers, &c. &c. The houses are small huts, wretchedly constructed as regards light and ventilation.

Drainage.

The drainage in the lines is all effected by open or surface drains, and is efficiently carried out, except at the very southern extremity of the right flank lines, which lies so very low as to render efficient drainage almost entirely impracticable. The difficulty is only apparent in the rainy season, and even then, most fortunately, evaporation and percolation are so rapid that very temporary and trifling inconvenience results. The very injudicious and unsatisfactory site of the lines is the sole cause of the difficulty complained of.

Tanks.

There are no tanks whatever in the neighbourhood of the lines, nor in the cantonment, that I am aware of.

Neighbouring Villages.

There are several small villages near the camp: the largest and nearest, not more than a mile distant, is Sháhápur, with a population of eight thousand. It is in foreign territory, and I know very little about it. The inhabitants are said to be very thrifty and clever in making money; they consist of artisans, agriculturists, grain-sellers, bunias, bankers, petty manufacturers, and shop-keepers. The other villages near the camp are Hasur and Husuti, but I have never visited them, and know nothing as to their origin, history, population, or other points of interest.

Conservancy.

The conservancy and sanitary arrangements of the lines are carried out very efficiently. The means adopted are—sweeping and otherwise cleaning the lines, the thinning or removal of exuberant vegetation, the prevention of the lodgment of foul or dirty water, and the immediate removal of all noxious matters. Tank-carts are used for removing the excreta collected from the latrines, and for this purpose visit the locality twice daily. The neatness, good order, and the cleanliness of the lines and bazaar of the regiment can scarcely, I think, be surpassed.

Water-supply.

The water-supply is abundant, the quality pure, palatable, and good, free from impurities of any importance. As regards quantity and character, I cannot suggest anything practical upon the subject. As regards the food chiefly used by the sepoy—that is, the starchy cereals—wheat, rice, dall, grain, bajri, jowari, and most of the *leguminosæ* are abundant, cheap, and of very good quality. Milk, eggs, and meat are cheap and abundant. The meat is very inferior in quality, and not always fit for food, as I have found the *cysticercus cellulosus* in some samples of the best beef purchased for the European officers.

Food.

Clothing. The clothing is suitable and good; and, after consulting with the Officer Commanding the regiment, I do not know of any alteration that would be a real improvement to it.

Duties. The duties for the most part are easy, ordinary garrison duty, and the sepoy enjoys, on an average, seven nights in bed.

Exercise, Amusement, and Occupation. As a rule the sepoy finds sufficient exercise in his parades; and his extra amusements and occupations consist in wrestling and other athletic sports, keeping his arms, &c., in order, attending school, and domestic duties.

Lock-up Rooms and Cells. The quarter-gaurd and cells are well built in a good elevated position immediately in front of the lines, and to the rear and outside of the hospital. They are lofty, well ventilated, with stone flooring, and a good covered verandah in front; the verandah at either end is covered in and forms the cells. Of course they are limited in size, and at times might be a very little over-crowded, though, generally speaking, this never occurs.

The following are the measurements :—

Quarter-guard... { Cubage, 8,202 feet.
Superficial area, 600 feet.

Cells..... { Cubage of each cell, 1,228½ feet.
Superficial area of each cell, 126 feet.

Marches. Beyond the march from Kaládgi, noticed in the opening paragraph of this report, no other marches have taken place

Hospital. The hospital is situated about 90 yards in front of the lines, and has a N.N.W. aspect. It is well built, with a plinth 3 feet high, a well-made stone flooring throughout, and has a double-tiled roof with three trapped openings in it for ventilation. It consists of one ward measuring 96½ feet × 22 feet, with a height, to wall-plate, of 12 feet; allowing or calculating the space about the tie-beam, there are 30,822 cubic feet available, and a superficial area of 2,123 feet. The number on the hospital door is 20, for which number the building is supposed to afford sufficient accommodation; but this would only afford about 1,541 cubic feet and 106 feet of superficial area to each patient—not sufficient in this country, and especially in the hot season and during the presence of an epidemic. A good verandah, about 9½ feet wide, surrounds the building, except at the north-west and south-east ends; at the former it is closed in, and forms a small dis pensary and a smaller store-room and office; at the other end a small room is fashioned out of the end of the back verandah, and which, for want of a better, is used as a segregating room. A plan and estimate have been submitted for segregating wards for the two N. I. regiments; each ward is to accommodate only three patients, with a scullery, bath-room, and latrine. The hospital is well ventilated, and since I have had charge of the regiment (19 months) has never been at all crowdde; in fact, it has, I am happy to be able to say, never had in it more than half the number of patients it could well accommodate. A contagious-diseases ward is much required; a good bath-room, an operating room which might also be made available when obstetric operations have to be performed, and a covered way to the latrines, are all essentially necessary.

Dead-house. A dead-house has been built for the use of both hospitals, a very well-built structure, well lighted and well ventilated, and large enough to hold one ordinary dissecting table.

Conservancy. As regards the hospital, the dry-earth conservancy system is assiduously and effectively carried out. Lime and dry earth being found effective deodorizers and disinfectants, nothing else is used. The secret of success in conservancy is not to allow of accumulation, but to have as rapid and as effectual a removal as it is possible to accomplish.

Water-supply for Hospital. The water used in the hospital is similar to that which I have already commented upon; it is supplied from the same source, and has been subjected to analysis. It will bear favourable comparison with the water procurable at most of the stations in the Presidency; though not sparkling, it is pure, wholesome, good water, and, as the analysis indicates, free from any more than traces of harmless impurities.

Sickness, Mortality, and Invaliding.

As regards sickness, mortality, and invaliding, I can have but little to say upon the two former subjects. Only 236 men were admitted into hospital during the year, and out of these there have been 3 casualties, 1 of the deaths occurring in a worn-out, delicate, little man, who was just about to be invalided. As usual, by far the largest number of admissions have been for fever, 91 in all—88 for fever of the quotidian intermittent type and 3 for remittent fever; if to these numbers are added the 29 cases admitted for that insignificant ailment, contusion, a little over half the total admissions are accounted for. As is common to this station, rheumatic affections (11), derangement of the abdominal viscera (30), and of the pulmonic system (12), help considerably to swell the number of admissions into hospital, and with those already noticed, under the heads of fever and contusion, account for 173 cases, or more than two-thirds of all those admitted. Syphilis, both primary and secondary, produced only 3 admissions, and bubo but 1; whilst such harmless affections as scabies (8), boils (17), ulcers (3), wounds (4), sprains (3), and simple catarrhal conjunctivitis (10), dispose of no fewer than 45 cases, leaving but 14 to be accounted for out of the total admitted (236); of these 14, 7 were cases of well-marked varicella, and all did well without a bad symptom, under very simple treatment, 3 cases of dracunculus, 1 of debility, 1 of mumps, and 2 for simple inflammation.

I shall very briefly notice only the three important classes of disease exhibited in the return herewith forwarded, viz., fever, derangement of the abdominal viscera, and the pulmonic apparatus. As the return indicates, fever has been the prevailing disease, and that in the form or type known as the quotidian intermittent, or common fever of the country. Usually it proved very amenable to the treatment generally adopted, with good diet, and in some instances stimulants. When complicated by hepatic torpor, or congestion, splenic enlargement, catarrhal or bronchial derangements, additions or alterations were made in the treatment. One case of remittent fever proved fatal in a young man who had recently joined the regiment: on admission he was exceedingly weak, almost prostrate; and although tonics, stimulants, good nourishment, and many febrifuge medicines were administered assiduously, he never rallied. There was no complication, but he had had an over-dose of the poison, and no vital power to resist it; effusion on the brain supervened, and he sunk 6 days and 17 hours after admission.

Colic, dyspepsia, diarrhœa, and dysentery formed the diseases affecting the abdominal viscera, and of these the latter was the only serious or really dangerous one. I very rarely varied my treatment, and when I did but very slightly. What is termed the ipecacuanha treatment I invariably practised modified, or supplemented, as idiosyncracies demanded; but, as a rule, ipecacuanha was what in the main I trusted to. It was used alone, or in conjunction with opium, gallic acid, tannin, logwood, lime-water, turpentine epithems, opiate enemas, and judicious diet. The result was all that could be wished. Out of the 12 cases recorded under disorders of the pulmonic apparatus, 2 proved fatal—1 from phthisis pulmonalis in the last stage, and to which I have already referred; he was only under treatment of a soothing and palliative description, and without any hope of cure, waiting for his pension. The other was a more interesting, though melancholy, case; it occurred in a fine young sepoy who rather than come into hospital suffered uncomplainingly in the lines as long as he could, and when admitted was in a very bad way. He acknowledged that previous to seeking treatment he had had severe cough, pain in his side, and one severe attack of hæmoptysis; the pneumonia for which he was admitted was singularly severe, and destroyed the lung tissue with great rapidity, giving rise to severe hæmoptysis, a fourth attack of which proved fatal. A *post-mortem* examination of the body proved that the attack he endured in the lines had destroyed the left lung almost entirely, the result of acute pleuritis, and pressure from a tolerably large accumulation of serum, which occupied the pleural sac on that side; whilst in the apex of the right lung there was a cavity, the size of a large walnut, with irregular broken-down walls to which minute blood-clots were adherent. The treatment consisted in the exhibition of diaphoretics with ipecacuanha, counter-irritants and stimulants; after the hæmoptysis supervened, ergot, gallic acid, sulphuric acid with digitalis and opium, and other tonic astringents, were tried in vain. Varicella at one time threatened to be epidemic, but only 11 cases in all presented, and proved most amenable to treatment. I do not consider any of the other cases either sufficiently interesting or important to call for notice in this already over-extended report.

Invaliding.

A somewhat large number (56) of men was invalided in the past year; they were, the majority of them, worn-out, debilitated men, with some few who suffered from specific disease, such as syphilitic rheumatism, whilst a few others were worn out from length of service only.

Causes of Sickness.

As to the causes of sickness, I would enumerate and dwell upon three; I wish I could as easily suggest a remedy. The climate, which is a remarkably treacherous one, cold and damp for many months in the year, and very variable. Next in importance is the insufficiency in diet from which the

majority of the sepoys and their families suffer; in some this results from penuriousness, in others from large demands upon a slender pay. Next is carelessness as to dress in a climate which, for the sake of health, calls for more than ordinary attention and addition to it; but here again the money question offers a terrible, because an insuperable, difficulty. The chief causes of sickness, as regards the sepoys, I have noticed very briefly, and the causes of mortality may be as summarily dismissed. A perusal of the returns affords full information upon the subject; and as the three casualties recorded, have not arisen from any occult, extraordinary, or even uncommon causes, but, on the contrary, well-known diseases, I need not say more about them. The three deaths in hospital and the one in the lines from apoplexy occurred in the Hindu race.

Causes of Mortality.

Mortality according to Race.

I am of opinion that the rain-fall is not prejudicial to the health of those who can and will alter their dress to the requirements of their health and the demands of a damp, chilly atmosphere. All the Europeans enjoy the monsoon season, but I am not writing of the influence of the rain-fall upon them. Upon the sepoy, during the greater part of a raw, damp, chilly night, when on sentry for instance, it is not beneficial, on the contrary. During the monsoon season, catarrhal affections, bronchitis, rheumatism, and fever prevail more than at other seasons of the year, and as it is the longest of the seasons, the unfavourable influence is proportionately protracted. We have been favoured with a perfect immunity from epidemics of any sort during the year under review.

Influence of Rain-fall.

Epidemics.

Vaccination has been most carefully attended to and performed by the hospital subordinates under my immediate supervision. Re-vaccination has not been carried out so fully, only occasionally and under emergent circumstances. Though willing always to adopt the plan of re-vaccination, and, in the event of variola making its appearance, always insisting on it, I do so simply to satisfy popular ideas, as I have no faith in the necessity of the operation wherever one really successful vaccination has been effected. If the introduction of the vaccine virus will, over and over again, produce the usually observed pustule, and run the usually observed course, then the individual has some idiosyncracy which vaccination will not protect from variola. I have seen this repeatedly: not very long ago it was illustrated most forcibly and painfully to my mind. An officer had been repeatedly re-vaccinated three times since his first vaccination in babyhood; his last re-vaccination was at Mhow, as I understood, and very successful; about eight months after, in Bombay, he was attacked with variola in the confluent form, and died. The vaccinations were each time successful.

Vaccination and Re-vaccination.

Health and Physique of the Men.

The health and physique of the men of the regiment are almost all that can be desired.

During the first portion of the year, at least for the first half, the medical subordinate under me and all the others in the station met at my house daily for an hour and a half, unless on Sunday, and by the aid of coloured diagrams, the bones of the skeleton, and oral teachings have had at least the outlines of anatomy, surgery, medicine, and materia medica, with some English, imparted to them. For the last half of the year my health has been so unsatisfactory and weak that I have not been able to meet them oftener than every second day, or three times a week; but even the little I could teach them in those few hours has been fully appreciated, and, it is to be hoped, may be of some advantage. On every occasion that anything of clinical interest in medicine or surgery has presented during my visits at the hospital, I have invariably endeavoured to explain and impress the important points of the subject. *A propos* of this subject, I would strongly recommend, having considered it well, and tried it practically, that at this and all large stations where there is a civil hospital it is very desirable that one of the two native medical pupils attached to the N. I. regimental hospitals should be sent to the civil hospital for a short tour of duty. The more extensive and much more varied and practical work to be seen there would be highly advantageous. Each native medical pupil might attend for one week at a time. There is little or nothing for them to do or to learn at a Native Infantry regimental hospital, and that little is monotonous and unvaried; the list being almost invariably composed of fever, shoe-bites, itch, contusion, bowel complaints, with an occasional case of gonorrhœa and rheumatism—an almost everlasting repetition, which at length becomes not only uninteresting and monotonous, but positively wearisome.

Teaching the Medical Subordinates.

My special observations must be few and short, and confined to practical subjects, and such as from experience I am well acquainted with. The report has already extended far beyond what I expected or intended; necessarily so from its embracing many subjects only remotely relevant to a medical report.

Special Observations or *Resumé*.

Filters for Hospitals.

As regards the water used in hospitals for the purpose of dispensing medicines, I would suggest that good filters should be supplied to all hospitals, of simple construction and easily cleaned; they should be considered as fixtures. Every hospital should be provided with, at least, one contagious-disease ward, capable of accommodating four patients, with a cubical space of 1,800 feet and superficial area of 140 feet for each patient; well ventilated by floor and roof ventilators, and with a well-arranged bath-room or lavatory attached. There should also be an operating room, commodious, lofty, and well lighted; it is very much required, and might subserve a variety of other important and very necessary purposes, viz. analysis and chemical examinations of water, food, &c. &c., the microscopical examination of pathological and other specimens, the application of electricity, the instrumental delivery of the wives of the sepoys and native officers in cases of difficult and dangerous parturition. I have met with several in the short time—19 months—I have been with the regiment; and to attempt such operations in the small dark rooms of a married sepoy's hut, is placing both patient and doctor at the greatest possible disadvantage.

Segregating Wards.

Dead house.

As already noticed, a dead-house has been built since my last report was written. It is a very substantial building, situated very close, equidistant to both hospitals of the N. I. regiments.

Latrines.

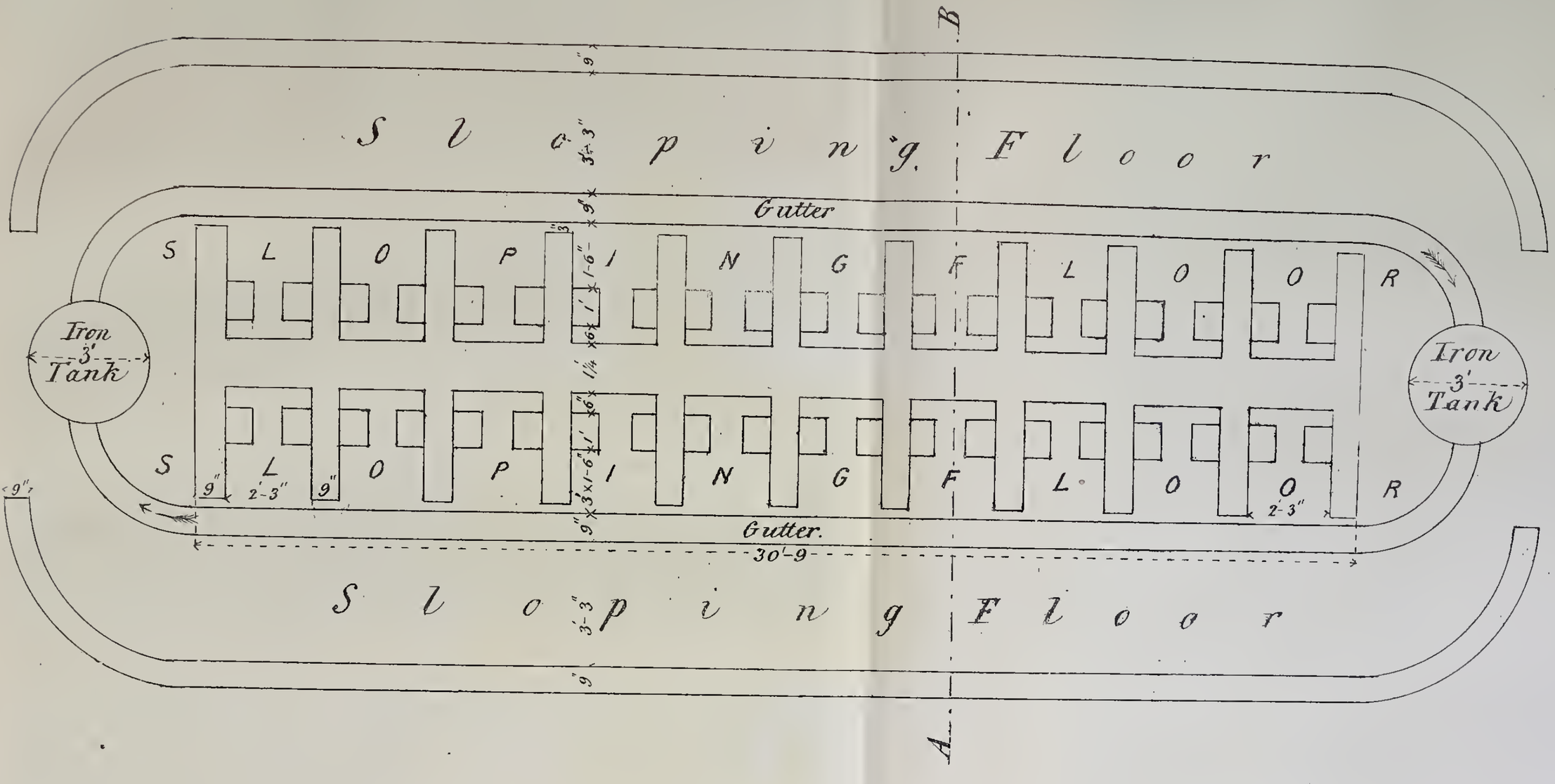
As at present constructed, the latrines are very defective, dry conservancy is impossible, and they are very offensive. They should all be remodelled and re-constructed, and the plan I would propose is as follows:—The floor upon which the receptacles or pans are placed, should slope downwards to the front, and the opposite flooring should slope, so that both should meet ending in a centre gutter running from the centre to each end of the latrine, so that all fluid urine or washing water must flow to, and be caught in, an iron tank, with a closely fitting cover, at each end of the latrine. The tanks might be emptied by hand-pumps or iron buckets, cleaned and deodorized twice a day, and at least one sweeper should be constantly on the watch, to instantly remove all dejections, and apply the dry-earth or lime. Excreta should never be allowed to accumulate. Each receptacle would stand upon small stone supports, as shown in the accompanying plan, which will, I think, effectually prevent the lodgment of any water, and bring the system as near as possible to dry conservancy. The receptacles or pans at present in use are taller and larger than there is any necessity for.

A common Cause of Sickness.

I attribute much of the sickness of the sepoy to a deficiency of good food. Some of the sepoys are married men with families, and the pay they receive cannot possibly, even in the very cheapest stations, and this is one of them, supply all their wants; other sepoys have a crowd of poor relations living with and on them, and they, too, are in very straitened circumstances; there is yet another class, and that is the penurious, who, for love of saving, starve, or partially starve, themselves, are always in a poor, weakly condition, and fall ready victims to miasmatic or other poison. In the cold and wet seasons, too, the men above referred to, are insufficiently clad, and, unless when in uniform, are exposed to the rapid variations of temperature so very common in this station. Pulmonic and hepatic affections are often thus produced. With the non-commissioned and native officers it is widely different; they have enough to live upon in a comfortable style, and it is quite the exception to see one of them in the sick list. It is also very common to find the sepoy on his return from furlough come straight into hospital—sometimes on account of fever contracted on the road, often from prostration or extreme debility, occasionally from dysenteric diarrhœa produced by bad (cheap) food used on the road; but each and all are the product of one cause—returning penniless, or nearly so, to their regiments. The married man leaves his last rupee with his wife for their family, and the unmarried sepoys spend their last in thoughtless extravagance or dissipation. They get back how they can; but it is a fact, and I have repeatedly witnessed it, that they return in a weakly, almost exhausted, state, more like men just recovered from an illness than men who, for a season at least, are supposed to have been enjoying rest and good food. The hospital is their retreat, and though often without organic disease it is absolutely necessary to keep them in for a time until they have picked up a little strength. I do not mean to say that this is the case with all, but it is in so many instances as to be quite remarkable.

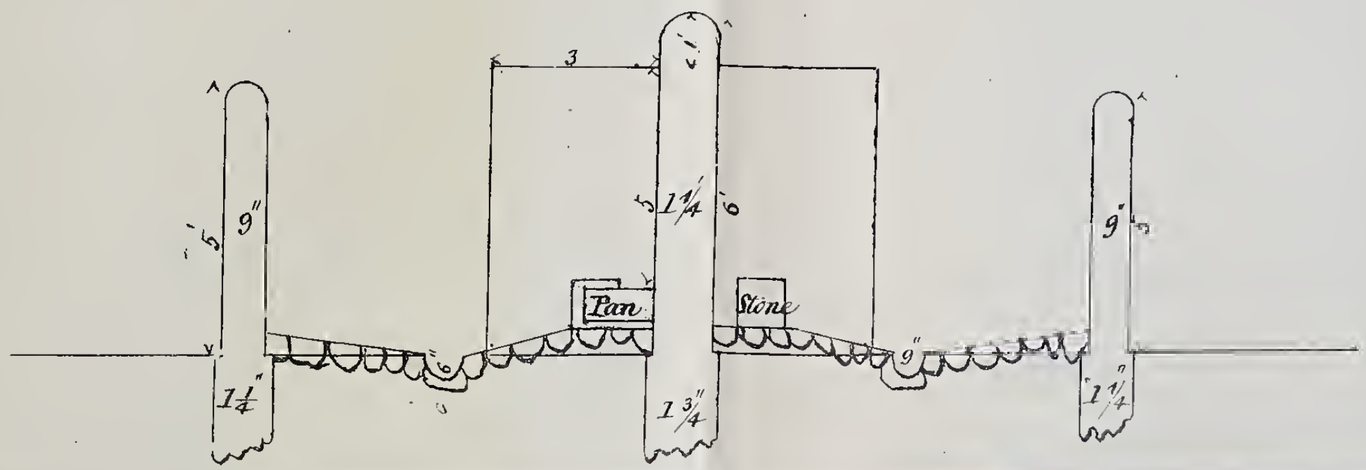
Apart from the position of the lines of the regiment, there is little that is not favourable to health; the guard-room is rather small for twelve men, according to the cubage laid down as necessary; but, unless in the rains, it is very seldom used by all the guard, three or four sleeping in the verandah, but even if all slept in the room I doubt very much if any evil would arise from it. Unless as regards hospitals, where there are always noxious emanations floating about in the atmosphere, I think the amount of cubical space laid down as necessary for health is considerably in excess of what is absolutely required, and every-day experience proves this in numberless instances.

Double Latrine for 20 men to ensure complete drainage & dry Conservancy



Section on A.B.

Scale 4 feet to an Inch



and far between, the popula[illegible]

I have endeavoured to sketch the medical history, for the last year, of the regiment in my professional charge, and I trust that, though imperfect in many respects, it will at least satisfy the authorities that, as regards the health, strength, and physical efficiency of the men the regiment is all, or almost all, that can be desired, and, as I said of it in my last annual report, fit for *any* service, anywhere.

H.M.'s Regiment of Poona Horse.

SIRUR.—In medical charge of Surgeon W. R. GORDON; Strength, 295.

Location and Movement.

1. The cantonment of Sirur is situated on the eastern boundary of the district of that name, in latitude 18°49′, and longitude 74°34′, on the high road from Poona to Ahmednagar, being distant 42 miles from the former and 32 from the latter. It was formerly a place of great importance, being at one time the head-quarters of the Bombay Command, and, so far as I can ascertain, was occupied by British troops soon after the taking of Ahmednagar. The remains of the entrenched camp and foundations of the huts are still visible, extending over an area of about three miles, which shows that the place was garrisoned by a considerable force of artillery, cavalry, and infantry. I am unable to give the exact height above sea-level of the cantonment, but I may mention that it is believed to be higher than Poona. Sirur is encircled on all sides, except the north-west, by a chain of hills rising to 100 or 150 feet above the plain. The continuity of the chain is broken on the south by the River Goreh, and towards the south-west the hills recede to a distance of four miles. Through the gap, thus formed as it were, Sirur gets the full benefit of the prevailing wind. The centre of the valley, in which the cantonment may be said to be situated, is occupied by an irregular-shaped undulating hill, rising at its highest point to about 100 feet above the station; on the gentle slope between this hill and the river are the Poona Horse lines and the village of Sirur (commonly known as Gornadi). To the east of the hill are the officers' houses and compounds, and to the south the parade ground. A substantial bridge of 13 arches spans the River Goreh about a mile from the cantonment.

The head-quarters of the Poona Horse, except when absent on active service, have been located at Sirur since the date when the regiment was raised in 1817. On this account, and from the fact that almost all the men have their families residing in the lines, the place is now looked upon by half the regiment as their home, although many of them originally came from Hindustan. The voluntary settling down of foreigners, if Mussulmans from the North-west can be so designated, in a district where more than two-thirds of the population are Hindus, is, in my humble opinion, a subject worthy of the consideration of our civil and military rulers.

Detachments.

2. A detachment of 150 men under an European officer has been stationed in Khandesh during the past year, the head-quarters being at Dhulia. By this detachment out-posts are maintained at Jamner and Shaháda. The men are relieved every second year, but nevertheless many of them return to Sirur emaciated and debilitated, on account of the frequent attacks of fever from which they have suffered. From the records of my hospital it is perfectly obvious that these out posts are maintained at a considerable loss to the effective strength of the regiment. When absent from Dhulia the men can get no medical treatment whatever, and, consequently, half the unfits, who have lately appeared before the invaliding committee attributed their broken-down and ruined constitution to an attack of fever or syphilis caught when on out-post duty, and allowed to run its course unchecked and uncared for.

Topography and Physical Geography.

3. The district of Sirur comprises a triangular piece of country between the rivers Bhima and Goreh, bounded on the north and west by a range of hills stretching almost from one river to the other. The features of the district are similar to other parts of the Deccan, undulating and presenting a pleasing variety of hill and dale. Those parts near the rivers where the soil is a deep black loam may be designated as fertile, and when the rainy season has been favourable produce luxuriant crops. On the higher lands the soil is very unproductive, and only cultivated to a limited extent. From the scarcity of water neither shrubs nor trees flourish, and almost half the district is little more than a barren waste, except during the rains, when it is covered with a stunted herbage. Villages are few and far between, the population sparse and poor. Although agriculture here as in many other parts of India is in but a rude and imperfect state, still with the aid of irrigation the district might be rendered a paradise compared to what it is now.

The general nature of the soil in the immediate neighbourhood of the cantonment is very light, being composed chiefly of disintegrated trap derived from the surrounding hills, mixed with a small portion of alluvial soil. In many places it does not exceed six inches in depth, and does not retain moisture nor produce rank vegetation. The sub-soil is composed mainly of "moorum," as hard-bound and impermeable as stone; to such an extent does this prevail, that it is rare to find a tree or a shrub anywhere except in the officers' compounds, or in places which have been prepared for them. On the banks of the dry water-courses concretionary lime or "kunkur" is found in great abundance, which after burning is well adapted as a building mortar. In some parts of the cantonment the rock crops out from the surface of the ground, and after exposure to the action of the atmosphere becomes disintegrated and crumbles down. Trap-rock of two distinct varieties occurs in the cantonment and vicinity: the one hard, close-grained, of uniform texture, and of a dark-bluish colour. It yields a stone excellently adapted for building purposes, and not very difficult to work. The other variety is of a greyish colour, and deeply impregnated with iron; it is soft and friable, and crumbles to pieces on exposure. It is useless for building purposes. Large boulders of basalt are very common in the cantonment and neighbourhood. Sites on geological formations similar to the above are supposed to be healthy. The district is far from being well supplied with water, as there are no tanks and no irrigation works. Several schemes have been projected and reported upon; but on account of the enormous expense from the hilly nature of the country, and the small acreage which could be brought under irrigation, it is very doubtful if any of the proposed schemes will ever be carried out.

The inhabitants of the villages on the banks of the Bhima and Goreh obtain a plentiful supply of water, as it is very seldom, indeed, that there is not, throughout the whole year, running water in the beds of these rivers. The villages on the higher grounds are entirely dependent on wells, and the supply is not only very uncertain, but in most places very impure, being highly contaminated with animal and vegetable organic matter. At the village of Káregaon, on the public road, six miles from Sirur, there exists a good spring; but from the nature of its surroundings, and its proximity to the village, the water is saturated with impurities. Below the principal spring is a small tank in which the villagers and travellers bathe, and from which, no doubt, the lower castes have to drink. This tank and the marshy ground around it is well known to be a hot-bed of the larva of the guinea-worm, and the disease is consequently endemic in the village.

The drainage of the district is effected through the two rivers Bhima and Goreh and their tributary "nallahs." These rivers take rise in the Western Ghâts and run in a south-easterly direction to join the Krishna. Everywhere the slope is great, and water runs off readily. The geological formation of the district renders the soil very impermeable to water, and, consequently, marshes and malaria are, generally speaking, very infrequent. There is no excess of vegetation, and little or no jungle, except in some parts of the valley of the Bhima, where there exist large and almost impenetrable fields of "prickly-pear." Through the exertions of the ryots this is gradually disappearing, and the ground being brought under cultivation.

The vegetable productions may be mentioned under the heads of cereals, oil-producing and medicinal plants and fruits. The principal cereals are:—bajri, jowari, wheat, gram, túr, múng, cúlty, muth, úrid, Indian corn, and to a limited extent the several kinds of rice.

The principal oil plants are:—ground-nut; kurdi, from which is obtained a red dye; tíl plants; umbari; karanj, the oil of which is used by the natives in the treatment of itch; mustard, &c.

The medicinal plants are about twenty in number, and consist of those in common use among the natives. The country is very ill adapted for growing fruits, and most of those produced are of very indifferent quality.

Sirur being situated in a valley surrounded by hills, the wind is very changeable, but it may be said to prevail most frequently from the south-west and west. The temperature from November to February is cool and invigorating, especially in the mornings and evenings. During the day the sun's rays are hot, as is the case everywhere in the Deccan. This season is sometimes rendered disagreeable by the prevalence of an easterly wind, which causes a sensation of dryness and shrivelling of the skin. About the middle of February it becomes perceptibly warmer, and by the 20th March the hot season has begun; this, as a rule, attains its acmé by the 1st of May, after which it is not unusual to have the sky occasionally overcast, but the hot wind continues unabated till the end of the month, unless on occasions when the monsoon sets in early. The first burst of the rains generally takes place between the 3rd and 8th June, and although no great amount of rain falls in this month, still from the cloudy nature of the atmosphere and the occasional showers the climate is pleasant and agreeable. The largest proportion of rain falls in July and

August, and this is followed by light drizzling showers. Both rain-fall and temperature are very variable, as may be observed from the following table, showing the means of each month for the last five years :—

			January.	February.	March.	April	May.	June.	July	August.	September.	October.	November.	December.
1870.	Mean temperature	at 6 A.M.	61	58	67	73	70	73	72	71	70	69	62	57
		at 4 P.M.	94	96	93	103	100	88	83	82	80	86	90	84
	Rain-fall in cents	...	...	...	...	7	28	9	327	681	737	588	749	15	...
	Highest temperature	...	95	98	105	106	105	103	94	88	91	92	95	91
	Lowest temperature	...	53	52	56	62	65	70	71	70	66	59	57	49
1871.	Mean temperature	at 6 A.M.	56	54	61	68	72	74	74	71	70	70	67	60
		at 4 P.M.	87	100	102	104	102	87	84	83	86	95	94	88
	Rain-fall in cents	...	698	...	...	5	54	270	46	134	502	95	231	...
	Highest temperature	...	96	104	107	110	106	103	93	89	100	106	106	98
	Lowest temperature	...	50	52	52	64	68	71	69	68	66	62	61	56
1872.	Mean temperature	at 6 A.M.	58	58	68	72	72	75	73	72	71	67	59	55
		at 4 P.M.	96	97	103	104	103	92	83	86	82	94	89	85
	Rain-fall in cents	...	...	...	...	74	11	466	385	293	1143	...	12	17
	Highest temperature	...	110	111	109	111	109	111	90	93	93	97	93	96
	Lowest temperature	...	68	51	55	67	67	72	69	70	69	54	57	53
1873.	Mean temperature	at 6 A.M.	53	67	67	70	75	74	73	72	70	76	66	55
		at 4 P.M.	89	69	102	103	103	90	83	84	81	95	97	95
	Rain-fall in cents	...	...	22	...	5	148	441	55	664	494	13	137	...
	Highest temperature	...	93	104	111	110	110	97	90	93	95	100	96	100
	Lowest temperature	...	46	53	56	66	68	72	72	66	68	55	58	51
1874.	Mean temperature	at 6 A.M.	51	57	62	71	75	74	73	71	70	67	59	55
		at 4 P.M.	90	94	99	103	101	89	85	82	78	89	89	89
	Rain-fall in cents	...	...	18	...	16	97	272	286	135	672	96	61	...
	Highest temperature	...	102	105	105	106	105	100	89	88	92	96	92	92
	Lowest temperature	...	60	60	64	61	70	71	70	68	67	57	51	44

Effects on Climate.

4. It will thus be observed that the seasons at Sirur exhibit a considerable variation from year to year, and that the changes of temperature are more abrupt here than at many other stations in the Deccan. The diurnal variation in temperature is great, and this would have been more apparent had the above observations been taken with self-registering maximum and minimum thermometers. From the comparative absence of water, and the paucity of trees in the surrounding country, the atmosphere during the cold and hot seasons is so dry that it renders Sirur unpleasant at first to those who have been long resident on the coast or in Guzerat. The high range of temperature during the hot season is, in a great measure, due to the want of vegetation and the high absorbing power of the soil. The sun's rays are absorbed very readily by the upper surface of loose disintegrated trap which predominates in the district; but in proportion as the absorbing power is great so also is the radiating power, and, consequently, it is very rare (except for a few days before the burst of the monsoon) to have a hot night at Sirur. The conformation of the country, as well as the nature of the soil, does not admit of the absorption or retention of any great quantity of water, and this fact accounts for the comparative absence of true malarious fever in the district.

Lines.

5. The lines of the Poona Horse were built 25 years ago out of regimental funds, and are now the absolute property of the regiment. They are commodious and substantial, and kept in excellent repair. As far as regards conformation and mechanical structure, the site is a very desirable one, and well adapted for a cavalry regiment. The close proximity of the village of Sirur is an objection which will be afterwards alluded to. When the lines were planned there was no limit to

the space available, and although they do not cover such an extent of ground as might be wished, still it cannot be said that the houses and horses are huddled together as too often happens in a large cantonment. The lines occupy a space of ground 240 yards in length and 470 yards in breadth, and consist of 8 parallel rows of houses running nearly south-west by north-east. The ventilation is perfect, as there are no obstacles in the vicinity to impede the thorough perflation of the prevailing winds. The syces' lines occupy a very convenient site at a short distance to the north-west, and beyond this across a dry water-course is a walled in space for temporarily depositing the horse-litter. As the sanitary condition of a camp depends to a great extent on the plan on which it is laid out, a brief description of the arrangement of the houses and horses may not be out of place here. The six centre lines of houses are arranged in pairs, back to back, and there is a single line on each flank; thus the front of every line of houses faces the front of the opposite line, and in the intervening space the horses are picketed. This space is 36 yards in width, and affords ample accommodation for two lines of horses. It is portioned off as follows:—From the plinth of the house verandah to the gutter behind the horses, 26 feet; picket ground for the horses, 16 feet; centre street between the horses' heads, 26 feet; with a similar arrangement to the front of the next line of houses. Behind each line of houses is a space 32 feet wide, which is walled in, and subdivided into private enclosures for the use of the families. Here also the baggage "tats" are picketed, and buffaloes and goats, if the sowar possess any. In para. 6 I have made some remarks on the sanitary condition of this court-yard. From the wall of the enclosure of one line of houses to that of the next line is an open street, 42 feet wide, and between the houses of the right and left wings this street is 82 feet wide. Trees were planted many years ago behind each line of horses, but from the nature of the ground they are very stunted in growth, and afford but little protection from the sun. The houses are raised on a plinth 2 feet high, and each line is 560 feet long. This is subdivided into 42 separate houses for the sowars and their families. From end to end of each line of houses in front runs a verandah, 5 feet wide, in which the saddlery and accoutrements are cleaned. Each house consists of two rooms, in the larger of which the family lives, and the smaller, which is simply the back verandah walled in, is used for cooking purposes. The large room measures 14½ by 11 feet, height to the eaves 10 feet, and height of roof 4½ feet, having thus a superficial area of 159·5 square feet, and a cubic capacity of nearly 2,000 cubic feet. The small room measures 11 by 5 feet, and is used for cooking, as also for a store-room. The houses are maintained in thorough repair, and it is only during a very severe storm that rain is found to penetrate the well-tiled roof. The houses at each end of the lines are set aside for native officers, and are of larger dimensions than the others; besides these there are five houses built apart from the lines, and are the property of the native officers who occupy them. The ventilation of the houses may be said to be nil; for, although there is a door on each side, it is seldom or ever that the two are open at the same time. The admission of fresh air is considered unnecessary to health; and from the fact that the men of this regiment keep their wives in strict seclusion, the ventilation of the houses must necessarily be more defective than where this prejudice and stupid practice does not exist.

There is no regimental bazaar at Sirur; all the supplies have to be procured from the adjoining village, which is not within cantonment limits. This was found to be very inconvenient when there was an epidemic of cholera in the town, as constant communication between the villagers and men of the regiment was prevented with the greatest difficulty. A village which is merely separated from the lines by a road 30 feet in breadth, and over the inhabitants of which the Commanding Officer has no control, is an anomaly which, the sooner it ceases to exist the better. The village is entirely under the civil authorities, is the residence of a mamlatdar and fouzdar, and boasts of a municipality; nevertheless its sanitary condition is not so perfect as could be desired. Within the last two or three years many improvements have been carried out, but still much remains to be done, chiefly from want of funds in the municipal treasure chest. It is confidently hoped, however, that the imposition of the privy-tax will shortly be sufficient to provide funds for carrying out sanitary improvements. Already the two public streets have been well lighted by kerosine lamps, a night-soil cart has been purchased and is in daily use, four small public latrines have been built (and money has been sanctioned for the remainder), but unfortunately the people seem very much disinclined to resort to them, making use, in preference, of the dry "nallahs" in the vicinity. But as soon as a complete set of latrines has been erected for the town, then the villagers who have not private privies in their houses will be compelled to use the public latrines. The town generally presents a cleaner and more substantial appearance than the ordinary village of the Deccan. Many of the houses in the bazaar have upper floors, and all of them open directly on to the street, having large open verandahs in which business is transacted during the day, and where, in many instances, buffaloes and cows herd together during the night. On the outskirts of the town the houses are wretched mud huts erected within a square enclosure. These enclosures vary in size, and are irregularly dotted over the place, and where they approximate each other no consideration has been paid to the

necessity of roads. More than two-thirds of the houses are tiled, but some of them have flat mud roofs, very ill-suited for a heavy monsoon. In the back court-yards of the more respectable houses a small part is screened off to serve as a privy and bathing place, but it is of the worst description. There is no vessel, the place is not even paved, simply the bare ground, which must necessarily become saturated with the liquid demissions of years. When this is in excess, the foul liquid passes to the outside of the walls by a gutter, and is there allowed to evaporate. Sweepers are supposed to visit these privies regularly, but I doubt very much if they do so, unless when they are called by the inhabitants, to whom the emanations from the accumulation of several days' filth may at last have become disagreeable. The night-soil, as it is collected by the sweepers, is placed in a cart, and conveyed to a distance of nearly a mile, where it is buried in trenches. Sirur contains a considerable population of Marwarees, who carry on an extensive trade in grain. There is no important branch of manufacture peculiar to Sirur, and nearly all the wares to be found in the bazaar are imported. The only two trades which deserve the name, are the tanner's and brick-maker's, both of them very offensive. The tan-yard is adjacent to the village, and if it is not of itself prejudicial to health, still from the offensive odour prevailing in its vicinity it must be looked upon as a nuisance, and ought to be removed The brick-kilns are at a little distance to the north-east, and, during the time they are burning, disseminate their peculiar odour, on a still morning, over a considerable area. The fuel used in these kilns is the dry sweepings of the village and the litter from the lines of the Poona Horse. The foregoing brief description of the sanitary condition of the village may be considered foreign to a report on the cantonment of Sirur ; but such a report would, in my opinion, be incomplete, did it not bring to notice any defect in the sanitation of the surroundings which would be likely to affect the health of the cantonment.

The drainage of the lines is carried out by means of surface drains running behind each line of horses. From the slope of the ground and the nature of the soil, which is all but impermeable to water, stagnant pools on the surface, or foul stagnant water in hidden drains, do not exist. In a well dug close to the lines water was found 32 feet below the surface. There are no tanks either at Sirur or in the neighbourhood, because the rain-fall is so uncertain that the supply would occasionally be insufficient to fill a tank of any extent.

Conservancy and Sanitary Arrangements.

6. The conservancy of the lines is carried out by sweepers entertained by the regiment. There are no public latrines except the small one at the hospital and two for the syces. The latter are but temporary erections, and are cleaned out by a sweeper entertained for the purpose. A site has been decided upon, and arrangements are in progress for erecting permanent latrines for the use of the syces and followers. These will have seats of cut stone into which a dammered iron pan for receiving the excreta can be fitted, and the dry-earth system will be carried out as far as possible. But to do this effectually would, I fear, be more than we can hope for. Even in the hospital, where there are but a few patients, it is a very difficult matter, indeed, to get these to follow the few simple directions necessary to ensure the perfect success of the system. Each house in the lines has its own private latrine, which is merely a corner of the back court-yard screened off by a mud wall. From this the excreta is removed every morning, and carried to a garden belonging to a native officer, where it is buried in trenches or pits, and afterwards used for agricultural purposes. This system of conservancy is, of course, attended with considerable expense to the men, and it is probably different to what prevails in any other regiment in the service. But so long as every sowar willingly pays the sweeper-tax imposed upon him, and provided always that the system is carried out efficiently, and that the latrines are kept scrupulously clean, it would, in my opinion, be a hardship and hurtful to the feelings of many of the men to compel them to resort to public latrines. Moreover, in the event of such a system being instituted, the present private latrines would still have to be maintained for the use of the females. There is, however, room for great improvement in these private privies before they can be pronounced satisfactory. I have seldom or ever perceived any offensive effluvia in the lines, from the fact that dry earth is used by many of the men as a deodoriser. But the great disadvantage of such a system of conservancy is obvious on entering the latrine, as it contains no receptacle to receive either the liquid or solid excreta ; there is merely the bare ground, which, consequently, becomes saturated with the liquid demissions. I have recommended that all these latrines be built on a standard plan, and that each of them be furnished with a pan or pans so placed as to intercept both liquid and solid discharges from touching the ground. These pans could then be emptied every morning into a large receptacle, or night-soil cart, and removed. This matter is now under consideration, and I hope to be able to report its completion in my next report. In a sanitary point of view the village is in far too close proximity to the lines, and inter-communication between the camp residents and those of the village so constant and unavoidable that, in the event of an epidemic, the contagion would readily be communicated from the bazaar to the lines

7. Both the drinking water and that used for domestic purposes are obtained from the River Goreh, in which there is a continuous flow. Bullock bheesties, in the proportion of 6 for each troop, are kept up by the regiment for carrying the water from the river, which is about a quarter of a mile distant. These also bring water for the horses. The supply has never yet been known to fail, although it has occasionally been necessary to dig "jirahs" in the loose sand to enable the bheesties to fill their "puckalls." Generally speaking, the water is very pure, indeed, and freer from impurities than what is obtainable from many other rivers of the same extent. The bed of the river is either rocky, or consists of loose sand through which the water percolates, and in this way is freed from many of its impurities. During the hot season a peon is stationed on the banks of the river in order to prevent the villagers washing clothes, bathing, or in any other way polluting the stream above the place from which water is drawn. During the rains the river water is loaded with impurities of all kinds, —in fact, to all appearance unfit for use. Nevertheless the men of the regiment and the villagers do use it, and prefer it too, to water drawn from the wells, which they assert is hard and unsuitable for cooking purposes. The analysis of the well water in the mess compound, and I presume the others are all alike, would certainly bear out the assertion. Many of our men filter their drinking water during the rains, thus freeing it from much of the suspended impurities, but even this simple process is never thought of by the villagers. It is certainly astonishing with what impunity they can subsist on water which must necessarily be loaded with vegetable and animal organic impurities. The dry-water-courses on the right bank of the river are used for purposes of nature by the townspeople, and no doubt will continue to be so until the public latrines are built, and the natives compelled to use them. Fortunately, the water-course most frequented for this purpose discharges itself into the stream, below the place whence water is procured for domestic use, and generally speaking during the dry season ; the others are well cleaned by the common scavengers of India, the pigs and cattle. I must not omit to mention that the river is polluted to a great extent by the prevailing custom of growing melons in its sandy bed. The pits, which are dug about 2 feet deep, are half filled with the sweepings and cattle litter of the villages, and this no doubt also contains a considerable amount of human ordure. From this, during the subsequent irrigation, the running stream must be impregnated with organic impurities. On all occasions when an epidemic of cholera has appeared in the Deccan the disease has also appeared at Sirur, and hitherto the predisposing and exciting cause has been set down as the drinking water, as this during the hot season was considered to be highly contaminated with impurities, but a subsequent analysis gave a negative result. During the epidemic of 1872 I was of opinion that the disease had been brought into the village by pilgrims arriving from an infected district, and I still put its origin down to the same source. The following analysis of the river water may be interesting :—

	Grs. per Gallon
Total solids dried at 280° F.	24·36
Loss on ignition	1·12
Chlorine	4·46
Sulphuric acid	2·66
Lime	4·39
Magnesia	2·06
Silica	3·22
Hardness before boiling	16°·80
„ after boiling	2°·80
Ammonia—	
In distillate from carbonate of soda	·0406
„ „ „ permanganate of potash	·0295
Of nitrates and nitrites	·0630
Oxygen—Total required by water at 140° F. in presence of acid	·0658

Colour in stratum of 2 feet	Apalescent, slightly milky.
Odour	Earthy.
Taste	Earthy.
Re-action	Neutral, slightly alkaline when concentrated.

Sediment...	...	Clay-coloured; floculent vegetable *debris*; novicula, monura dulcis, anthrodismus.

From this analysis it would appear that the water is contaminated with organic matter, probably to a great extent of animal origin, but a great part of which might be removed by efficient filtration. I do not, however, think that it can be said to be highly objectionable as a drinking water. I fear that any suggestions from me regarding the removal of the sources of impurity which I have endeavoured to point out, would be of little avail, as my predecessor on several occasions brought the subject to the notice of the Sanitary Commissioner, but to no effect. The growing of melons in the bed of the river ought to be prohibited, if not altogether, at least above the source whence the drinking water is obtained. It would, no doubt, be of considerable importance to have a supply of pure water in the lines independent of the river; but to obtain this by sinking wells is considered very doubtful, so that it only remains to devise some scheme by which the river water can be raised and brought into the cantonment.

Food—Quality of, and whether abundant and cheap.

8. It is difficult to estimate with any certainty the quantity or quality of the food of the native soldier, as so much depends upon his caste, religion, and pecuniary circumstances. Every native soldier is permitted to buy his own food, and he may, therefore, indulge in luxuries, or the reverse, according to the state of his finances, or his peculiar idiosyncrasy. Some live well, and quite up to their means; others upon the most meagre fare, and hoard up their money; while others who have large families and relations dependent on them must necessarily live cheaply. There is yet another class, but I am happy to say they are not numerous, who deny themselves and their families a sufficient quantity of food and proper clothing in order to gratify their propensity for narcotics. I allude to the opium-eaters and opium smokers. Much has been written in the attempt to prove that the habit is not so injurious to the constitution as is generally believed; but, in my opinion, the utmost that can be said in its favour, is, that it is not a greater vice than spirit-drinking. Both practices are destructive of health and happiness, and induce physical debility and premature decay. The opium-eater may succeed for a considerable time in concealing his vice, but ultimately he is betrayed by his anœmic and cachectic appearance, his bright and deep-set eyes, and his premature old age. When seen in the morning he is drowsy and stupefied, and unable to comprehend the simplest orders given to him. These men are, as a rule, better known to the Commanding Officer and Adjutant than to the medical officer, as they eschew the hospital to the last. They are what may be termed "bad bargains," for deprive them of their accustomed dose and they are unfit to perform the ordinary routine duties of a cavalry soldier. I shall in a future paragraph have occasion to allude to the invaliding of these men. Generally speaking, the Poona Horse sowar presents the appearance of being well fed and well clothed. All sorts of food are procurable in abundance in the bazaar, and at very moderate rates. Remembering what has been said above, it would be very difficult to lay dowu any hard and fast scale of ration as being the exact quantity consumed daily by a sowar; but, so far as I have been able to ascertain, the following may be taken as the diet in commou use among the Mussulmans and Mahrattas, of which castes more than three-fourths of the regiment consists :—

	Lbs.	ozs.
Mutton	0	8
Dall	0	4
Wheaten flour	1	0
Rice	0	8
Vegetables	0	8
Ghee	0	$2\frac{1}{2}$
Curry-stuff	0	$2\frac{1}{2}$

and in addition a variable quantity of sweets and salts. This diet combines a fair proportion of nitrogenous, fatty substances and carbo-hydrates. It appears to be admirably suited to the ordinary sowar of this regiment, who maintains on it a very fair standard of health and efficiency. The syces must necessarily use the cheaper grains, bajri and jowari, with mut, &c., instead of wheat and dall. It is very seldom, indeed, that they are in a position to procure animal food.

Head-dress.

9. Scull-cap of red cloth, with small red-corded turban.

Clothing—Coat.

Alkahc, dark-green skirt reaching within three inches of the knee, trimmed with buff-coloured braid, or gold lace, according to rank.

Breeches.	Yellow dungaree.
Boots.	Black leather, extending to the knee.
Cumberbund.	Red, 2½ yards long and 3 inches broad.
Sword and Pouch Belts.	Black patent leather.
Haversack.	English canvas.

During the hot season white cotton instead of cloth alkalic.

This dress I consider admirably suited for a native cavalry sowar, as it it is loose and comfortable, and in no way interferes with the respiratory or circulatory organs.

10. Two parades a week and three during the drill season, and light guard duties. The average number of consecutive nights in bed for each sowar during the past year has been 12·5. These duties cannot be considered heavy, and have no injurious effect on the health of the regiment. I must here, however, bring to notice the very insufficient sleeping accommodation for the men on the standard guard. The room is far too small, each man on guard having only 329 cubic feet of space and a superficial area of 33·2 feet.

Duties and their Effect on Health.

11. The men have plenty of exercise with foot parades, sword practice, and musketry, in addition to their ordinary duties. There are no enforced amusements, every sowar being allowed to amuse himself in his own way. Shooting appears to be what they are fondest of. Generally speaking they find plenty of occupation in grooming their horses, keeping their accoutrements clean and tidy, and in studying their drill.

Exercise, Amusement, and Occupation.

12. The only lock-up room or cell which exists, is one attached to the standard guard room, and this is very unsuitable for the confinement of prisoners. It is badly situated, insufficiently ventilated, and much too small, having a cubic capacity of 622 feet and a superficial area of 66·5 feet. From being narrow, low-roofed, and thinly tiled, it is necessary in the hot weather to leave the door open at night; otherwise the place would be unendurable. Its unsuitability as a place of confinement has been formerly brought to notice, and I would urgently recommend that a new cell and a standard guard be erected in a more appropriate situation.

Lock-up Rooms and Cells.

13. The head-quarters of the regiment has been stationary at Sirur during the year. In January 91 men marched to Dhulia to relieve part of the detachment stationed in Khandesh.

Marches.

14. The building now in use as a hospital was built as a gymnasium for the regiment and it is far better suited for this purpose, or for a standard guard, than for the treatment of the sick, as it occupies the position, with reference to the lines, where a standard guard is usually placed. It is situated in a central position, 30 yards to the west of the lines, on the drill ground, and thus derives the full benefit of the clouds of dust which are set in motion every morning on parade. It consists of a single ward measuring 46·8 by 30 feet, height to the eaves 7·5 feet, and of the roof 3·5 feet, having a cubic capacity of 13,957·2 feet and a superficial area of 1,404 feet. A small projection in front of the main building, 18 feet by 12 feet wide, has to serve the purpose of a dispensary and surgery, and a small dark cell attached to one of the corners, has to serve as a store-room. On the east side there is a verandah 6 feet broad, and in this the regimental followers, who have the misfortune to get sick, and who from caste or on religious grounds cannot be admitted into hospital, have to be accommodated and treated. The only subsidiary buildings attached to the hospital are a cook-room and latrine, and the ground in the vicinity is not adapted for the erection of quarters for the subordinate establishment, as such buildings would interfere with the free perflation of the prevailing wind through the lines.

Hospital and its Surroundings.

15. This is carried out by means of the windows and doors, and by three iron ventilators in the roof, and is, on the whole, very satisfactory.

Ventilation.

16. Fortunately the number of sick is rarely above what can be accommodated in hospital; but over-crowding is always prevented by treating some of the convalescents as out-patients. This is a practice of which I disapprove, but it is occasionally unavoidable.

Over-crowding.

17. The hospital is sufficient to accommodate 11 or 12 patients, whereas accommodation ought to be provided for at least twice that number. The defects of the building are very obvious, the walls are too thin and too low, and there is no verandah (except on the east side) to shelter the windows from wind and rain. But a much more glaring defect than this is the absence of all subsidiary buildings, except a cook-room and latrine. A hospital without such essential appendages as a bath-room, a separate ward for the segregation of contagious and infectious cases, quarters

Accommodation and Defects.

for the hospital assistants, dooley-wallahs, and sweeper, would be more appropriately designated by the title of dispensary. Its requirements are numerous, as is evident from the enumeration of its defects. If the present building is to be continued as the hospital, the only improvement which I have to recommend (and I have done this previously) is the erection of a verandah all round. But what I would now strongly recommend, is the conversion of the present hospital into a quarter-guard, of which the regiment stands in urgent need, and that a plain, inexpensive, but substantial, building be erected on the south of the lines near the dead-house. On this site there would also be ample space for the erection of subsidiary buildings.

Conservancy.

18. The dry-earth system is, as far as possible, carried out in the hospital latrine. The solid excreta are separated from the liquid, which latter passes into an urinary half filled with dry earth. The latrine is kept in a satisfactory condition, and the excreta are utilised in a garden some distance off.

Hospital Water-supply.

19. This is generally procured from the river, and has been fully described under para. 7. But occasionally the drinking water for the hospital is taken from some of the wells in the officers' compounds.

Sickness, Mortality, and Invaliding.

20. During the past year the regiment has been very healthy, there having only been 177 admissions out of an average strength of 295 ; the ratio per cent. of admissions to average strength being 60·0 as compared with 90·9 for 1873. The following table will show the diseases causing the admissions :—

Diseases.	Admissions.	Deaths.	Ratio per 1,000. Admissions.	Ratio per 1,000. Deaths.
General Diseases.				
A	50	...	169·4	...
B	12	...	40·6	...
Local Diseases.				
Nervous System	3	...	10·1	...
Eye	16	...	54·2	...
Ear	...	...	...	...
Nose	...	...	...	...
Circulatory System	...	...	...	...
Absorbent System	...	...	...	...
Respiratory System	3	...	10·1	...
Digestive System	27	...	91·5	...
Urinary System...	3	...	10·1	...
Generative System	...	...	...	...
Organs of Locomotion	1	...	3·3	...
Cellular Tissue	7	...	23·7	...
Cutaneous System	15	...	50·8	...
Conditions not necessarily associated with Local or General Diseases ...	5	...	16·9	...
Poison	...	...	...	...
Injuries ... { Local	33	...	111·8	...
{ General	2	...	6·7	...

No deaths occurred at head-quarters during 1874. Thirteen men were sent before the annual invaliding committee, but only 9 passed. Those rejected may appear to have no physical disability, but they are well known to the officers of the regiment to be unfit for service, as they are confirmed opium-eaters. Seven men were granted sick certificate.

Principal Causes of Sickness.

21. From ague there were 48 admissions, but all of the cases, with one exception, were of a very mild type, and readily yielded to treatment—in many cases an emetic followed by a diaphoretic mixture being all the treatment necessary.

There were 7 admissions from chronic rheumatism, 3 of them being re-admissions. Primary syphilis gave 1 admission and secondary 2, but the latter was the same patient admitted twice. A case of hemiplegia remained in hospital from 1873, and was re-admitted during the past year. Ultimately the patient had to be invalided.

From conjunctivitis there were 15 admissions, but all the cases readily yielded to treatment. I attribute many of these cases to local irritation from dust getting into the eyes on parade.

Dysentery gave 7 admissions, all of which cases were treated in the ordinary method; 6 were discharged cured, and 1 man was granted sick certificate to Hindustan.

There were 2 admissions from hepatitis, both cases very mild, readily yielding to treatment, and followed by no bad consequences.

The cutaneous system furnished 15 admissions, 11 of them being from boils.

Local injuries gave 33 admissions, all being the result of accidents on parade or at stables. Two cases of fracture remained from 1873 and 2 dislocations occurred during the past year, 1 of the shoulder and 1 of the patella. The other cases were contusions or injuries from kicks.

Influence of Rain-fall.

22. The rain-fall during the last year amounted to 16½ inches, being about 5 inches below the average. It is difficult to account for this diminution in the rain-fall during a season when the fall at all other stations in the Deccan has been so much above the average. The situation of Sirur in a valley surrounded by hills, and the prevalence of very high winds during the rainy months, is no doubt the chief cause, as the rain-clouds appear to be swept in gusts across the station from the summit of one range of hills to that of the other. A few miles north of Sirur, where the valley is extensive and open, the rain-fall was above the average, and, so far as I can learn, the same may be said of all the surrounding district. Such being the case, the scanty fall at Sirur ought to produce no perceptible influence on the health of the inhabitants or on the price of food. But from the experience of the last hot season, which was preceded by a scanty rain-fall, there is every reason to anticipate a hot season of unusual severity during 1875. I do not, however, think there is any danger of the water-supply in the river failing, but I wish I could speak with as great confidence of the supply in the wells of the officers' compounds.

Epidemics.

23. There has been no epidemic disease in Sirur, or the district, during the past year. In the month of December there were a few cases of measles among the children in the village, and one of the regimental recruits, who lives outside the lines, was attacked. The case was a very mild one, and ran its course without a bad sympton.

Vaccination and Re-vaccination.

24. Every endeavour has been made to vaccinate all the children within cantonment limits ; and as the sowars approve of vaccination, and are alive to its advantages, I may safely state that there does not remain a single unprotected child (over four months of age) in the cantonment. All recruits and a few of the men were re-vaccinated. There were 60 primary vaccinations, all successful except 1, and 56 re-vaccinations, but of this only 9 proved sucessful.

General Health and Physique of the Men.

25. As previously mentioned, the general health of the men has been very good during the past year ; no death has occurred in or out of hospital or among those who were granted sick leave from Sirur. I attribute the good health of the men of the Poona Horse in a great measure to the fact that a large proportion of them are Mussulmans, who live well, and whose diet consists of a fair proportion of animal food. This will be more apparent when I mention that the admissions to hospital among Mussulmans were at the rate of 50·4 per cent., whereas among the Hindus the admissions were at the rate of 98·3 per cent. to average strength. Nothing, I think, can be more conclusive than this, as it clearly demonstrates the superiority of the soldiers who consume animal food over those who are compelled by caste to exist chiefly on a vegetable diet. The general physique of the men is I should say, above average.

Treatment of Disease when special.

26. The only special treatment which has been adopted in the regimental hospital is the substitution of cinchonidine for quinine in the treatment of malarious fevers. It answers very well, apparently, for the mild type of fevers observable at Sirur ; but before pronouncing in its favour, a little longer and more varied experience is necessary. I have confined my remarks in this report to the treatment of the sick of the regiment, amongst whom few cases have occurred offering an opportunity for special treatment. Unfortunately for me, in a professional point of view, I have not treated a single case which, in my opinion, would be of any interest, were I to make it the subject of a special report.

Special Observations.

27. In alluding to the various subjects under each heading separately, I have brought every matter of any importance to notice, and have now no further special observations to make.

Resumé of the whole.

28. In giving a *resumé* of a report much that has already been written must necessarily be recapitulated, but I shall endeavour to condense my concluding observations into as small a space as may be compatible with the object for which this paragraph is intended. The Poona Horse, except when absent on active service, has been permanently located at Sirur since 1817. In a comparatively healthy climate, where the site of a camp has been judiciously selected, it is a matter of the utmost importance for a soldier, and one which is highly appreciated by young recruits,



PLAN
of the
CANTONMENT
OF
SIRUR

Scale about 200 yds. to an inch.

to belong to a regiment having a stationary depôt wherein, when he proceeds on service, he may leave his family and all relations dependent upon him. The district of Sirur lies between the rivers Bhima and Goreh, and has a population of 77,046, chiefly Hindus (Mahratta). Except on the banks of the rivers it is but very indifferently cultivated from the want of water. The soil consists chiefly of disintegrated trap, mixed with a small portion of alluvium.

29. Medical Pupils. There are no medical pupils at Sirur, but the hospital assistants have received clinical instruction at the patients' bedside when opportunity offered.

H. M.'s 12th Regiment N. I.

DHARWAR.—In medical charge of Surgeon-Major C. F. OGILVIE; Strength, 678.

During the year the regiment has been stationary. Over one-third of the regiment was gradually moved from the old condemned lines to the new pendalls in the new military cantonment.

No detachments have been sent from head-quarters. The conformation of the soil is very undulating. There are no high hills near; consequently there are no enclosed valleys, punch-bowls, or spots where the air stagnates.

The ground is covered with grass, which is kept short by grazing animals upon it.

Any brushwood, prickly-pear, and all that is objectionable upon the ground is now being uprooted and cleared away. There are no large trees within a considerable distance of the new cantonment.

The geological formation of the soil is argillaceous, ferruginous schist, belonging to the gneiss series of Southern India. Strata all tilted, nearly vertical. There are no rivers near. There are several nallahs in the camp; but the camp being situated on a slope, they are dry except in the monsoon, when they convey the water away into two tanks. The drainage is excellent. In my opinion the climate of the new cantonment will prove to be all that could be desired.

The lines, which it is believed will be finished by the end of 1875, are being built on the standard plan and space. With the exception of the two first pendalls, extra ventilation has been provided in the rest.

The bazaar has been commenced to be built, and will probably be finished by the end of the year 1875.

There is excellent surface drainage, the lines being built on the slope of the ground.

There are two tanks in the new camp, and their bund with sluices are being made.

The dry-earth conservancy is in force.

Water is derived for drinking purposes from one new well situated to the east of the lines. Another well is situated to the north of the lines near the officers' quarters; this has not been as yet much used. The water of both these wells I have analysed, and found to be very good. A third well is being sunk, situated to the rear of the lines and near the bazaar. There is an abundant supply of good food for the troops, and lately the prices have reached a point which gives them no compensation for dearness.

The clothing is as per regulation. The dress worn by the men for line-building is a double-threaded dungree smock, and a cumblee for the rainy and cold seasons. Guard duties are light, but line-building is very heavy (five hours a day). It has not, however, injuriously affected their health. The line-building has given the men as much exercise and occupation as is good for them.

There is a regimental garden in the new lines, and a gymnasium and workshop at the old lines, where the men can amuse themselves if they feel disposed. There are no lock-up rooms or cells; they will be built in course of time.

As remarked above, no marches have been made. The hospital at present in use is situated in the fort, and is a very good one, with sufficient accommodation under ordinary circumstances. There is nothing objectionable near it, excepting a temple, to which a great number of people resort every Thursday, and which is a very great nuisance to every one in the fort. Over-crowding occurred for a few weeks in consequence of men attacked

with guinea-worm. It was relieved as much as possible by placing the men in two hospital tents. The present hospital being two miles from the new camp, a new hospital has been sanctioned with all the new improvements, and will be commenced, I presume, after the commencement of the new official year.

The dry-earth conservancy is not in force.

The ordure is duly removed in the regimental filth-cart to a considerable distance from the lines.

The water for drinking purposes is procured from wells; that for ablution and other purposes from tanks in the fort.

During the past year the average strength of the regiment has been 678·5. 616 cases were admitted into hospital, 14 remained in hospital on 1st January 1874, making a total number of 630 cases treated during the period under report; of these 610 were discharged to duty, 4 were discharged otherwise, being invalided, 4 died in hospital, and 12 remained under treatment on 31st December 1874.

The daily average number of sick was 30·8; the percentage of treated to strengh was 91, deaths to strength ·6, and deaths totreated ·6.

General Diseases.

Of the admissions under this head, 57 were for ague, 14 for febricula, 43 for chronic rheumatism, 20 for lumbago, 12 for primary syphilis, and 1 for secondary syphilis, 3 for anœmia, and 1 for acute rheumatism. The cases of intermittent fever were, as a rule, slight, and were discharged after a few days' residence in hospital.

The admissions from this disease were 75 less than in the preceding year. The admissions from rheumatism were about the same as during the year 1873, being 7 less. The admissions from syphilis were 21 less than during the preceding year. The case of rheumatic fever, I regret to say, terminated fatally.

Small-pox.

Eight cases were admitted into hospital; 3 of them are not shown in this return—one being a woman, another her infant under one month old, the third being a boy. Only the infant died. Two of the cases were of a very severe confluent form.

Diseases of the Urinary Organs.

Gonorrhœa and its complications gave 13 admissions, the same number as the preceding year.

Diseases of the Respiratory System.

Under this head 59 cases of bronchitis and 5 of pneumonia were admitted. One of the cases was double pneumonia, and two others were very serious, and I feared these three would terminate fatally. I am happy to say, however, that 61 of these cases were discharged to duty. Three of the cases of bronchitis were invalided on pension.

Diseases of the Digestive System.

Five cases only of dysentery were admitted, and all were discharged cured after a few days' residence in hospital.

Diseases of the Liver.

Only one case of simple congestion was admitted, and was discharged after a few days' residence in hospital.

Constipatio.

One case was admitted and terminated fatally after twelve days' residence in hospital. I much regret I could not obtain a *post-mortem* to ascertain the situation of the lesion causing the disease.

Diseases of the Cellular Tissue.

Of these diseases 46 were admitted for abscess, one of which died. Guinea-worm gave 142 admissions, one of which, I regret to say, died. The worm was in the neighbourhood of the knee-joint, and was broken; this was followed by intense swelling, inflammation, and suppuration into the joint. The patient was subsequently attacked with diarrhœa and dysentery. He recovered from these, but he succumbed to the discharges from the abscess. It will be seen that guinea-worm has given the largest proportion of admissions, viz., 23 per cent. of the total number; next in order bronchitis 59, ague 57, contusio 50, abscess 46, rheumatism 43, ulcer 40, and lumbago 20. Of the 4 deaths which occurred in hospital, 2 were Hindus and 2 Mussulmans. The-rain-fall, last year, was much greater than has been known for several years: 49½ inches were registered, whereas during the preceding nine years the average fall was 29 inches. It exercised a most salutary influence on the regiment; for the number of

admissions from guinea-worm after the fall of rain gradually diminished.

Epidemic. There was no epidemic during the year.

Vaccination. Seventy-four children were vaccinated, and all were successful. No re-vaccination took place.

General Health and Physique of the Men. With a percentage of 91 treated to strength I cannot report the health of the regiment good, and the physique of the men might be better. It must be observed, however, that the number of serious cases admitted into hospital has been small.

There has been only one native medical pupil attached to the hospital during the past year. When I first arrived at Dharwar I directed him to attend daily the Anglo-Vernacular School, situated a few yards from the hospital, for his improvement generally.

A few months ago this school was removed from the fort to too great a distance for the boy to attend it. Since then I have had him over at my house daily (except when there was anything to prevent it), and my method of instructing him has been to make him write from dictation, anatomy, materia medica, and practice of physic, correcting his mistakes, and making him learn them afterwards; subsequently examining him on the subject upon which he has been writing.

14th Regiment N. I.

KOLHA'PUR.—In medical charge of Surgeon HUGHES; Strength, 683.

Location and Movement of Corps. H. M.'s 14th Regiment N. I. returned from the camp of exercise at Chinchwad on the 11th January, and has since been quartered at Kolhápur.

2. Detachment. On the 5th November a full company marched on Kaládgi to take a tour of detachment duty at that station. The company has not yet rejoined head-quarters.

3. Topography and Physical Geography. The cantonment is situated on an undulating plain about a mile to the east of the large town of Kolhápur. The camp is exposed to the east and south, but sheltered to some extent by a range of hills twelve miles to the W. and N. W.

Soil. In the higher parts of the camp the trap-rock is covered with red soil or moorum, while black cotton soil is found in the hollows.

Water. The station is fairly supplied with water from deep wells. The Panch Gunga, a tributary of the Krishna, flows round the north and east sides of the camp.

Drainage. It is into the above river and its tributary nallahs that the drainage flows. The rising grounds on which the lines and officers' houses are buitl, are soon dry after the heaviest rain, but the black soil of the hollows retains muchof the water.

4. Effects of Climate. Kolhápur, being fully exposed to the parching N.E. and E. winds, is not a desirable residence during their prevalence, especially for people predisposed to hepatic or rheumatic disease. When the W. and S.W winds blow, as they do steadily during the monsoon, the climate is pleasant, cool, and moist, and healthy for Europeans, though the reverse for natives, who are more exposed to the weather, whose clothes are generally damp, whose houses leak, and many of whom have to sleep on the ground, being unable to supply themselves with cots.

The rain-fall this year registered 60 inches and 84 cents.

Lines. 5. The lines which front S.E. are built on a tolerably extensive *plateau* of rock and moorum.

Ventilation. The streets between the houses are broad, clean, and dry, and the wind from all quarters passes freely through them.

Bazar. The regimental, which is also the Sudder Bazaar, is about a furlong N.W. of the lines. It is kept as clean as possible. As a rule, it is well supplied with grain, &c.; but many men prefer to go to the city on market days, and draw their weekly supplies from that source—rice, dall, &c., being sold at a slightly cheaper rate there.

Villages. There are no villages in such close proximity to the lines as to be likely to affect the sanitary condition of the latter.

There are no tanks within a mile of the lines. The Rankala and Pudmala tanks are separated from the station by the city of Kolhápur.

A sepoy's hut is a "lean to." The one I examined, which is a type of all, was 10 feet 6 inches high from the floor to the roof ridge and 5 feet 6 inches high from the ground to the top of the outer wall. The room was 14 feet long by 8 feet 6 inches broad, giving a floor space of 119 square feet. The total cubic capacity of the residence was 952 cubic feet.

Ventilation.

The doorway was 4 feet high from the lintel to the threshold, and $1\frac{3}{4}$ feet wide from post to post (area 7 square feet). When this door is shut, as it generally is, when the owner of the house is at home, the ventilation is entirely on what might be called the chink-and-crevice system. The fresh air finds its way in through the chinks in the door, and the heated air makes its exit through the crevices of the roof. Fortunately the door does not fit very close, and day-light can be seen through the tiles. The huts are not built on plinths, and ought to be rebuilt.

Sewage.

There is an irregularly-shaped bathing place in the corner of the room, the water from which escapes through a hole, about 1 inch in diameter, into the gutter outside.

Sub-soil Water.

The lines being built almost directly on rock, no attempt has been made to ascertain at what depth water is met with.

Conservancy and Sanitary Arrangements.

6. The trench conservancy system is well and successfully carried out in this cantonmant. The trenches, according to the season, are dug to the east or west of the lines, so that they may be always to leeward. The road sweepings and night-soil from the officers' bungalows are collected every morning, and carted to a place set apart for the purpose at some distance rom camp, and there buried.

Water-supply.

7. The potable water for the sepoys is drawn from four wells adjacent to the lines. These wells are lined with masonry, and surrounded by a stone wall and platform as ordered by Government. They are fitted with wooden covers so as to reduce to a minimum the chance of the water being contaminated with dust, dead leaves, and other extraneous matter. I had hoped to be able to give an analysis of the water, but the test-box now being sent round the district has not yet been received here.

Imperfections.

Some of the wells nearly ran dry last hot weather, but a timely fall of rain put an end to all anxiety regarding a water-famine.

Impurities.

The means detailed above are enough to obviate all preventible contamination of the wells. Of course the latrine trenches are never dug in the vicinity of wells.

Suggestions.

Fortunately a plentiful rain-fall removed all risk of inconvenience from scarcity of water last year, but it would not be wise always to depend on an opportune shower. I would suggest that at least one other well should be dug near the lines.

Food—Quality of, and whether abundant and cheap.

8. The food is abundant, and during the past twelve months has been tolerably cheap. The mutton and beef to be procured in the bazaar is poor in quality, and, though not unfit for food, is certainly undesirable.

The diversity of the diets given by different medical officers in their reports for previous years shows how difficult it is to ascertain what the usual amount of food daily consumed by a sepoy really is. Some men when questioned regarding their daily consumption, mention quantities of food which, though they might occasionally be eaten, could not be taken habitually without producing illness; others, thinking perhaps that the inquiry has been made with a view to agitating for increased grain consumption, give a dietary so meagre that work could not possibly be done on it, and, when asked why they do not live better, say they cannot afford to do so.

I give below a diet table showing approximately the amount of grain, &c., daily consumed by the men of this regiment. A separate column has been allotted to the non-commissioned officers of each caste, as it appears on enquiry that, as a rule, they eat more than their caste-fellows in the ranks. In order that the nutritive value of the various diets may be readily seen, the number of grains of nitrogen and carbon contained in each has been calculated according to Mr. Lyon's tables, and placed in round numbers at the bottom of each column:—

Articles of Food.	Purdesees.		Sikhs & Dogras.		Jats.		Mahrattas.		Purwarrees.		Mussulmans.		NativeChristians		Jews.		Goojurs.		Remarks.
	Havildar.	Sepoy.	Ha vilar.	Sepoy.	Havildar.	Sepoy.	Havildar.	Sepoy.	Havildar.	Sepoy.	Havildar.	Sepoy.	Havildar.	Sepoy.	Havildar.	Sepoy.	Havildar.	Sepoy.	
Flour, wheaten ...	32oz.	16oz.	32	32	32	32	16	16	16	16	16	16	16	16	16	16	32	32	
Dhall, Túr	8oz.	4oz.	8	8	8	8	8	4	4	4	4	4	4†	4†	2	2	4	4	
Rice	8	8	8	8	8	8	8	8	8	8	16	16	8	8	8	8	8	8	
Ghee	1	1	1	1	1	1	1	1	1	½	1	1	1	1	1	½	1	1	
Milk	16	8*	16	8*	16	8	8*	8*	8*	8*	8	8*	4	*	8	8*	16	8*	
Vegetables	8	8	8	8	8	8	8	8	8	8	...	...	8	8	8	8	8	8	
Meat	...	...	16*	8	...	...	8	4	8	8	16	8	8	8	*	*	16*	8*	
Fowls...	...	...	...*	...	...	...	...*	...	...	...	...	...	...	...	...‡	§	...	...	
Bajri	...	...	...	...	...	...	8	8	8	8	...	...	...	...	...	...	...	...	
Dry fish	...	...	...	...	...	...	...	...	...	...	...	...	...†	...†	2	2	...	...	
Country liquor ...	...	...	...	...	...	...	...	...	...	...	...	...	2	1	2	1	...	...	
Nitrogen in grains ...	540	260	540	490	540	510	450	350	380	380	460	370	280	270	290	270	480	420	
Carbon	9,200	5,300	9,200	8,880	9,200	9,000	7,790	6,900	7,080	6,900	7,780	7,080	5,130	4,950	5,480	1,530	9,030	8,140	

* Occasionally. † The dry fish is sometimes substituted for dhall. ‡ Twice a week. § Once a week.

Note.—When articles of food are only taken occasionally, they have not been included in the calculation for N. & C.

It is curious to note that, while, according to the above table, the Purdesee and Brahmin havildars live as well as any and better than most of the other non-commissioned officers, their sepoy caste-fellows live worst of all. The burly and imposing presence of the high-caste havildars, contrasted with the spare and prematurely-aged appearance of the Brahmin and Purdesee sepoy, testifies, in some measure, to their diets having been correctly stated.

The diet of the Christian and Jew privates is but little richer than that of their Brahmin and Purdesee comrades; but the men are more robust-looking, and are certainly less frequently inmates of the hospital. It is possible that these two castes owe their superior physique and comparative immunity from disease to the spirit-dram which they regularly take, and also to the tea and coffee in which they occasionally indulge.

Clothing.

9. Great impvements have been made in the working dress of the British soldier; but the sepoy, to whom freedom from constraint about the chest and arms is even more essential, is still buttoned up in a tunic "fitting" as close as possible. The coat is not the only objectionable article in a sepoy uniform; the trousers and the boots are both worthy of condemnation. The former, considering that the sepoy generally wears his dhotee under them, are too tight, and often chafe the thighs on a long march. As for the boots, it is enough to say that they are badly made of inferior country leather, after an absolute European model, and make no pretence to a fit. The wearing of them is the chief, if not the only, cause of the number of "contusions of the foot" one sees in a native regiment. Having thus expressed an unfavourable opinion regarding all the articles of a sepoy's attire, excepting the great-coat, which is a sensible garment, and the forage cap, which *with a good puggree* is an efficient head-gear, it is but fair that I should indicate how the dress might be improved.

Coat.

A loose patrol coat would be a great improvement on the tunic at present worn. Not only would the looseness allow more free expansion of the chest and movement of the arms, but a man when on sentry could wear as much clothing as he liked under it; at present a man can wear only a thin *pairan* under his tunic, and being thus similarly clad at mid-day and mid-night, the alternations of temperature must render him liable to rheumatism and lung affections.

Trousers.

Zouave trousers or knickerbockers have been suggested, but there have been discussions and dissensions as to what material the gaiters, necessary for this style of dress, should be made of, and some have objected that much time would be lost in taking off and putting on the gaiters when fording a stream. Against gaiters I would further urge that under such circumstances they would be a great encumbrance. A sepoy wading through a nallah is a helpless enough looking object, his hands grasping his rifle and boots, and vainly endeavouring to keep his rolled up trousers from slipping down into the water, without having to hold a pair of gaiters in addition. I would suggest that the pantaloons should be loose and baggy as far as the middle of the calf, where they should be gathered into a band, to which a leg-piece buttoning close to the limb should be attached. The garment would be knickerbockers and gaiters in one. The leg-piece might be of any colour or material, but I should recommend stout cloth.

Boots.

The foot covering should be a native shoe or sandal of some uniform pattern, easily put on and taken off. A sepoy clad in the above fashion would be more comfortable than he is now, and would be able to undergo greater fatigue. On coming to a ford he could kick off his sandals, unbotton the leg-piece of his pantaloons, and roll them up above the middle of the thigh, in half the time he now takes to untie and pull off his boots and insecurely roll his trousers up to the knee.

Duties.

10. The regiment has to furnish regimental guards only at this station. The men have 12·5 consecutive nights in bed. During the drill season there are two parades a day; after its conclusion, there are, of course, few. The duties at this station are not so severe as to have any appreciable bad effect on the health of the men.

Exercise, Amusement, and Occupation.

11. For many years the younger men of the regiment have trained themselves to run, jump, wrestle, and perform feats with heavy *mugdools*. All races take part in these athletic exercises, but in mere feats of strength perhaps the Sikhs and Punjabis excel. The Mahrattas, however, bear the palm in those exercises requiring nerve and skill more than strength, such as breaking a cocoanut placed on a man's head with a bludgeon, or slicing a lemon on a comrade's hand. Some men do a little carpentery, and one or two possess some amount of skill in working in silver.

Those who do not occupy themselves in one or other of the ways above mentioned, pass most of their leisure time in sleep.

Lock-up Rooms and Cells.

12. The cubic capacity of each cell, of which there are two, is 1,152 cubic feet. As the floors of the guard-rooms and cells are of stone I should recommend the issue of cots for the men on guard and for the prisoners.

Marches.

13. With the exception of eleven days at the beginning of January, during which the regiment was returning from the camp of exercise at Chinchwad, it has not been on the line of march in 1874. As it seems to be a prevalent idea that the broken rest and discomforts of marching are good for the men, I append a table, showing the number of admissions and daily average sick in the months of November and December 1871, 1872, 1873, and 1874. On the 1st November 1871 the regiment marched from Mhow, leaving its seriously ill and unfits behind, and arrived in Kolhápur on the 29th November. The admissions in December were more numerous than in the preceding month, but the average daily number of the sick was less. This is explained by the fact that some of the more chronic cases brought from Mhow in hospital were too weak to be discharged to duty on the march, and that cases of dysentry, conjunctivitis, and bronchitis admitted on the march, made no progress towards recovery while exposed to glare and the extremes of temperature in tents. The greater number of admissions in December may be ascribed to the men having been knocked up by their long march.

On the 1st November 1872 the regiment marched to Poona to join the troops assembled there to receive the Viceroy, and returned to quarters on the 6th December. On this occasion all old and weakly men were left behind as a depôt, and the number of admissions was much less than in the previous year during the two months under notice.

In 1873 the road to Poona was again traversed that the regiment might take part in the camp of exercise at Chinchwad. Kolhápur was left on the 18th November, and returned to on the 11th January 1874. The number of admissions was much the same as during the preceding year. The fact that the daily number of sick in December was only 4·2, deserves explanation. On the arrival of the regiment in Poona, on the 4th December, all the sick were sent to a depôt hospital; and at the camp men admitted into the regimental hospital, and not likely soon to be fit for duty, were sent to the field hospital for treatment. During the same two months of 1874, when the regiment was quietly in quarters, though paraded twice a day, the number of admissions was much less, and that notwithstanding the sick list was swelled by chronic cases and unfits. Had the men, who failed to pass the General Invaliding Committee, not been attached to the regiment, the number of admissions and daily average sick in November and December 1874 would have been as follows :—

	Admissions.	Average Daily Sick.
November ...	29	... 12·4
December ...	27	... 9·6

Table showing the Admissions and Daily Average Number of Sick.

November.

	Year.			
	1871.	1872.	1873.	1874.
Admissons	52	49	45	32
Daily average number of sick	31·2	13·2	19·6	15·3

December.

Admissions	62	41	44	30
Daily average number of sick	22·1	15·3	4·2	12·6

It would appear from the above figures that marching is not so good for the health of troops, at least native troops, as is generally supposed. It may be thought that "shoe-bites" added greatly to the number of admissions during what I may call the marching months; to prove that this is not the case I give a table showing the total number of admissions for "shoe-bite" during the months of November and December:—

1871.	1872.	1873
9	5	16

In this regiment the very sensible custom prevails of allowing the men on the line of march to wear native shoes, except when entering or leaving a cantonment. At the camp of exercise the men had to wear regulation-boots; hence the large number of admissions in 1873.

14. The hospital is a well-built stone edifice, raised on plinth of masonry, facing westward, and overlooking the Belgaum road. The main ward is 96 feet long by 32 feet broad and 18·5 feet high, giving a cubic capacity of 39,972 cubit feet. The side rooms have each a cubic capacity of 3,693·25 cubic feet. One of these rooms is used as an office and surgery; the other, which is colour-washed and darkened, is used for the treatment of ophthalmic cases.

Hospital and its Surroundings.

On the right rear of the hospital are the quarters of the 2nd class establishment, while the cook-room and the houses of the hospital assistants are on the left rear; well to the rear and to leeward of the hospital is the newly-completed dead-house.

The latrines are separate from, but close to, the hospital, being reached by a stair and covered way. The hospital guard-room is in front of the building. With the exceptions of the quarters of the hospital establishment there are no dwelling-houses in or near the compound.

15. There are two ventilating tubes in the roof for the escape of heated air. Fresh air is admitted by the doors and windows, which can generally be kept open; when they are shut there is no entrance for fresh air.

Ventilation.

16. There has been no over-crowding. When there are many patients under treatment some of them are put into a subsidiary hospital close to the main building.

Over-crowding.

The dimensions of the smaller hospital are as follows:—Length 50 × breadth 22 × height $19\frac{3}{4}$ = 20,625 cubic space.

17. The accommodation is ample, the hospital being the finest one for natives I have ever seen.

Accommodation and Defects.

There are no proper quarters for the 1st class hospital establishment. The houses the 1st and 2nd class hospital assistants now occupy were intended for 2nd class servants; the doolie-wallahs have to live outside the hospital compound, no houses being available for them.

Deficiencies.

Proper quarters for the 1st class hospital establishment are urgently needed. A wall or hedge should be placed round the compound, and a direct road should be made to the hospital from the Belgaum road.

Requirements.

The door and window ventilation is quite sufficient when the air is neither chill nor damp, but I should recommend that wire-gauze should be substituted for glass in the upper panes of the windows, and a few holes drilled in the doors; were this done, the doors and windows might be closed in cold weather and the building rendered more comfortable and less draughty. As patients suffering from lung affections are very sensitive to draughts, I would suggest that two or three screens, to go round the beds of such cases, should be supplied to each regimental hospital.

Recommendations.

18. The hospital latrines are on the dry system, at least on as dry a system as the habits of the natives will allow. During the rains large quantities of disinfectants are used; but in the dry weather earth is found to deodorize the ordure sufficiently, and McDougall's powder, &c., is only added to the stools of men suffering from diarrhœa and dysentery.

Conservancy.

Hospital Water-supply.

19. The water-supply is drawn by bheesties from the nearest regimental well and brought to the hospital in mussucks. The water appears to be good.

Sickness, Mortality and Invaliding.

20. 1874 has been a healthy year as far as regards admissions, but a greater number than usual of severe cases has been treated. The number of admissions was 458 as compared with 546 in the preceding year. This decrease is mainly due to a falling off in the number of malarious diseases treated. Last year only 98 cases of ague and 3 of remittent fever were admitted, while in 1873, 212 cases of the former and 12 of the latter disease received treatment in hospital.

Mortality.

Four deaths have occurred during the past twelve months.

Invaliding.

Leave on medical certificate for varying periods has been granted to twelve men.

The following figures will, I think, show that some change is urgently needed in the mode of pensioning sepoys. On the 1st October there were in the regiment 310 officers and men of over 15 years' service, and, consequently, entitled to retire on a pension, could they prove themselves unfit for further service. Of these, 123 appeared before the regimental invaliding committee, the majority stating that they suffered from debility, chronic rheumatism, shortness of breath, and night blindness; after a careful examination of all these candidates for pension, 40 were selected and sent before the General Invaliding Committee at Belgaum. Though most of these had been frequently treated in hospital for various diseases, and were all, in my opinion, at least unfit for war service, if not for the mere routine duties of peace, only 11 passed.

Under the present system, a man is not *entitled* to pension on retirement till he has completed 40 years' service, or, in other words, till he is about 60 years old, long before which, even if in good health, he would, by reason of his age, be perfectly useless as a private soldier. Were a man of 30 years' service sent up as unfit, and did he express a wish to serve on, he would be sent back to his duty, unless his medical history showed that he had been frequently in hospital. Age alone unfits a man for hardships and exertion, and the native army would be more efficient were all sepoys pensioned after 21 years' service, all havildars after 24, and native officers after 30. Officers and non-commissioned officers might be allowed to re-engage for a few more years, provided they were approved of by the Commandant and the Medical Officer. To assist the latter in coming to a decision each man should be furnished with a medical-history sheet to be kept posted up during the whole of his service, as is done in the British service.

Not only do the regulations at present in force keep men in the service who by reason of age alone are unfit, but they induce men to malinger, or, at any rate, to make the most of their disabilities. For instance, a private of 18 years' service, being tired of a military life, and seeing no prospect of advancement, desires to retire on his small pension; but he knows that, unless he can convince the doctor of his unfitness, he must serve on for other 22 years. Accordingly he bethinks himself of the rheumatic pains from which he, like most other natives of middle age, has suffered uncomplainingly for some years, and presents himself at hospital. He looks ill, for he has starved himself for some days, and is admitted and treated for chronic rheumatism, but no treatment benefits him. He appears before the invaliding committee, is rejected, and for another year comes frequently to hospital, causing much extra expense to Government in drugs and in the difference between his pension and his full pay and grain compensation. It will be said that malingerers should be detected and punished. But the majority of men complaining of chronic rheumatism are not malingerers, though no doubt in many cases they exaggerate the severity of their symptoms. A man would be possessed of more than ordinary constitutional strength could he stand 15 years' exposure to heat and cold, to winds—hot and dry, and chill and damp, on sentry duty without contracting rheumatism. To distinguish between real and altogether shammed pains is difficult even to men of Professor Aitken's standing (see p. 24, Vol. II. 4th Edn. of his book); how impossible then must it be for us to diagnose with certainty between slight and severe pains. As regards night blindness, dimness of vision after dusk is merely a question of degree, and there are no unmistakeable optholmoscopic appearance to be noted in cases of hemeralopia. The disease being due to exposure to glare and the weakness left by repeated attacks of ague, sepoys are more likely to suffer from this disability than any other class of people.

Principal Causes of Sickness.

21. The highest number of admissions (98) was for ague, the next highest (38) for boils. This troublesome, but not dangerous, complaint is often due to the friction of the trousers, the furunculi being most frequently met with about the perineum, cleft of the nates and gluteal region. Chronic rheu-

matism and bronchitis furnish 22 admissions each; 10 cases of conjunctivitis were treated during the year, none were at all severe; 1 severe and 9 slight cases of dysentery were in hospital under treatment; 10 cases of hepatitis were admitted; 2 were of more than average severity.

Principal Causes of Mortality.

22. One death occurred from bronchitis and hæmoptysis, 1 from pneumonic phthisis, and 1 from pyœmia following the slight operation for fistula in ano. A man who showed decided symptoms of leprosy, while under treatment for ague, died somewhat suddenly from failure of the heart's action.

Mortality according to Race.

23. All the men who died were Hindus; one was a Mahratta, one a Purwarree, and two were Purdesees.

Influence of Rain-fall.

24. The average annual rain is 28 inches 45 cents; this year 60 inches 84 cents were registered. This excessive fall has not produced an increase in the number of admissions for ague during the months of October and November. In each of these months only 14 cases were admitted, the same number having been treated in January last after the return of the regiment from Chinchwad. The mornings and evenings this year have been cooler, and the east winds less boisterous and trying. The immunity of the regiment from ague after such a heavy rain-fall is due to the excellent position of the lines.

Epidemics.

25. There have been no epidemics.

Vaccination and Re-vaccination.

26. Sixty-four persons have been successfully vaccinated and 3 recruits successfully re-vaccinated. Four primary vaccine operations and 8 re-vaccinations failed during the year. The Superintendent General of Vaccination remarks that the number of failures is large in regimental practice. This is easily explained. There being but few arms to look at, the inspection is close, and cases about which there is the slightest doubt are entered in the "unsuccessful" column.

General Health and Physique of the Men.

27. The average height of the men in the regiment is 5 feet 7 inches. The men, with the exception of about 30, are well developed, healthy, and fit for any service; great endeavours are being made to get rid of men broken down by severe illness or saturated with syphilis.

Treatment of Disease when special.

28. At one time, having two cases of spasmodic asthma in hospital, I determined to try Dr. Ringer's recently-published cure of that distressing complaint by the inhalation of ipecacuanha spray. Not being possessed of a regular spray-producer, equal parts of vinum ipecacuanha and water were atomized with a common scent-vapourizer and the patient directed to inhale the spray. After a few trials, pure vinum ipecacuanha was substituted for the mixture in drachm doses, and the beneficial effects of the treatment were soon evident on one man. The other did not like having the medicine blown into his mouth, and vinum ipecacuanha was added to boiling water and the steam inhaled. This mode of locally applying the drug was unsuccessful, and the ordinary chloral treatment had to be resumed. The ipecacuanha-spray treatment seems to cure, not merely to palliate the disease when uncomplicated. The man on whom it was tried, used often to come to hospital for relief before it was used, but has now been free from paroxysms for more than a month.*

The other man, seeing the relief his fellow-sufferer obtained from the inhalation, at last asked for it. In his case, though the severity of the paroxysms was mitigated, the good effects of the treatment were not so marked, the asthma being complicated with some amount of chronic bronchitis.

Special Observations.

29. As noticed in my report for 1873, spasmodic affections of the respiratory apparatus are very common in Kolhápur at all seasons, but more especially in the cold weather. Almost every case of bronchitis is complicated with asthmatic paroxysms. One man, a martyr to asthma, was sent away for twelve months on medical certificate. He came back looking well and hearty, and stated that he had never suffered in the least during his absence. Within a week of his return he was laid up with asthma recurring nightly in paroxysms of great severity, till the ipecacuanha-spray treatment was successfully tried.

While the adults are so liable to asthma, spasmodic croup is very common among the children. The disease, though often severe, is fortunately seldom fatal.

Resumé.

30. Reform is needed in the mode of pensioning sepoys, and great improvements could be made in their uniform. Some provision with which the sepoy, who hates fresh air, could not interfere, should be made for the ventilation of his hut.

*He has since (14th January) returned suffering from a severe attack.

Instruction of the Medical Pupils.

31. The medical pupil is daily instructed in clinical medicine and surgery. He is exercised almost daily in dictation (his weak point), or is taught bandaging and the application of splints and the use of surgical appliances, or instructed in the immediate treatment of emergencies, such as hœmorrhage, opium, poisoning, suspended animation from drowning or hanging, &c.

H. M.'s 15th Regiment N. I.

MALEGAUM.—In medical charge of Surgeon-Major BURROWS; Strength, 614.

Location and Movements of Corps

1. The 15th Regiment has been stationed at Málegaum since February 1872. It joined the Poona camp of exercise last cold weather, and returned to cantonment on the 17th January.

Detachments.

2. From 29th June to close of the year, small parties, numbering collectively 99 men, have been detached from the regiment on treasury guard duties at Nándgaum, Násik, Chándor, Sinnar and Niphád.

Topography and Physical Geography.

3. The cantonment is situated on open ground on the western bank of the River Mosam, which has its origin in a spur of the Western Ghâts at a distance of about 24 miles, and falls into the Girna, four miles below the camp. The geological formation of the whole district is horizontal trap, chiefly amygdaloid. In and around cantonments the surface soil is very scanty, the rock cropping through it in many places. The ground falls gradually through camp to the Mosam, and is intersected by shallow water-courses channelled in the rock, by which the surface water is rapidly drained off into the river. During the past year a considerable portion of the spare ground within cantonment limits has, for the first time, been broken up and cultivated with rain crops.

Effects on Climate.

4. The scanty rain-fall averaging only 21 inches, the rocky surface, and scanty soil, with rapid drainage of surface water, render the site of camp an essentially dry one, and the heat is occasionally great; but the country around the station being open to the prevailing breezes in all directions, the cooling of the surface after sun-down is rapid, and but little oppressive heat is experienced at night. From the same causes the variations in temperature on the setting in of the breezes from the east and north at the commencement of the cold season are considerable, and much felt.

Lines.

5. The accommodation for the regiment now consists of two portions, to be noticed separately:—

1st. The regular Native Infantry lines.

2nd. The old artillery barracks and gun-shed, with portions of the arsenal, which were converted into dwellings for the men last year when the wing of the regiment, previously detached at Tanna, joined the head-quarters.

The regular lines were built in 1864. They consist of 8 rows of huts, running east and west, separated into 2 divisions by a central space 40 yards wide. The separate rows have an interval of 15 yards between them, and are divided into 2 blocks, each by a cross road 9 yards wide. The buildings are of a kutcha brick with tiled roofs, and are built on a plinth of about a foot in height.

Available Space.

The number of dwellings in the lines, exclusive of separate quarters for the native officers, is 352, with a total cubic capacity of 482,960 feet, giving an average for the whole of the occupants of them (calculating the children at half their strength) of 697 feet each.

In the old artillery buildings above mentioned, exclusive of quarters for the native officers, 189 dwellings were formed, having a total capacity of 416,553 feet, and affording an average cubic space of 980 feet for each occupant of them during the year. The whole of these buildings are in excellent repair.

Ventilation.

The arrangement for efficient ventilation in all the huts as built, is good; but its efficacy is much interfered with by the native habit of excluding as much air as he can from his dwelling. The custom of closing up the interval left between the top of the verandah wall and roof is much resorted to for this purpose. Ventilation through the roof-ridge would be the only effectual remedy for this evil, but I believe when sepoys have been housed in quarters so ventilated, they have complained much of the cold.

Bazaar.

The bazaar is a large one, containing a population of about 5,000. It extends for nearly half a mile along the bank of the river, a portion intervening between it and the lines. Under the superintendence of the Staff Officer its sanitary condition is well cared for, and it is remarkably clean and well kept.

Neighbouring Villages.

The only village in the neighbourhood of the lines is that of Gowlewara, which is situated on the river-bank a few hundred yards above them. It is within camp limits, and under the same superintendence as the bazaar. Its occupants are chiefly families of camp-followers and gowlees. Regulations are enforced, forbidding the watering of their cattle below the bundara which crosses the river immediately above the village, with a view of preventing, as far as possible, contamination of this source of water-supply.

Drainage.

The lines being built on the trap-rock, with very scanty surface soil, and on ground which slopes through and from them immediately to the river, the whole site after the heaviest rain-fall rapidly dries, and the dwellings are never damp. In the line-wells the water does not rise nearer than 10 feet from the surface.

Tanks.

There are no tanks or swamps in the neighbourhood of the lines.

Conservancy and Sanitary Arrangements.

6. The conservancy establishment for the regiment consists of six sweepers, who daily collect the sweepings from the dwellings and lines generally, and deposit them in heaps on open ground in the rear, from whence they are removed by the station conservancy cart. The six sweepers also do the work of the regimental latrines, which for the past two years has been carried out on the trench system. The method has hitherto worked remarkably well. The ground available for the purpose, however, is extremely limited in extent, and approaches nearer than is desirable to one of the lines of barracks. The working of the system would be of more value if the numbers habitually using the latrines were known, which it is not, as a large percentage of the occupants of the lines resorts for the purposes of nature to the fields and nallahs on the further side of the river (the site used by the inhabitants of the bazaar for purposes of nature), and to which custom there is no restriction beyond that of going below the usual site of drawing water.

Water-supply.

7. Since 1872, when some of the line-wells were deepened, the supply of water has been abundant and good. The river-water also, since the cultivation of melons, &c., in its bed immediately above camp has been prevented, has been found by recent analysis to have much improved in quality. Water from this source is, however, but little used for drinking by the inhabitants of the lines. Analyses of water from the two sources made in 1871 and during the past year, are given below :—

	Line Well.		River Mosam.	
	1871.	1874.	1871.	1874.
	Grains per Gallon.		Grains per Gallon.	
Total solids	28·28	19·60	35	21
Chlorine	1·49	·63	4·17	1·26
Sulphuric acid	·95	Minute quantity	1·82	Minute quantity.
Lime	6·74	1·744	10·66	1·885
Hardness	21·61	5·00	28·84	5·5
Nitrates or nitrites	·3570	None.	·5250	None.
Oxygen required at 140 F. in presence of acid	·1610	·00056	·2058	·0168
Colour	Faint yellowish green, slightly milky.	Extremely faint-bluish green.	Faint greenish brown, slightly milky.	
Smell	Offensive.	None.	Offensive.	Slightly earthy.
Taste	Doubtful.	Do.	Doubtful.	None
Sediment	Abundant, very dark greenish brown, almost black.	Do.	Abundant, very dark greenish brown, almost black.	Green in small quantity.

The use of a well, situated 300 yards below the latrines and close to a nallah by which the ground used for them is drained, has necessarily been interdicted for drinking purposes.

Food—Quality of, &c.

8. Supplies of grain of all kinds used by natives have been of good quality throughout the year, and at no time above average rates; a variety of vegetables in abundance have also been always procurable in the bazaar at prices within the sepoy's means. The supply of meat has also been good.

Clothing.

9. The present dress of the men for all the duties they have to perform is a suitable one, with the exception of the boot. The system of shoeing the sepoys with native-made boots of European pattern is a constant source of temporary inefficiency; 29 cases have been treated in hospital during the year from injuries to the feet from this cause.

Duties and their Effect on Health.

10. Since the return of the regiment from the Poona camp of exercise in January, its duties, with the exception of furnishing small detachments to Násik, Sinnar, Niphád, Chándor, and Nándgaum, have been those of ordinary regimental and garrison work only; no ill-effects on the health of the men have been observed to result from any of them.

Exercise, Amusement, and Occupation.

11. The present duties of a sepoy appear to suffice him in the way of occupation and exercise; and for amusement, beyond a stroll in the bazaar he seems to have none.

Lock-up Rooms and Cells.

12. The lock-up room in the quarter-guard has a cubic capacity of 3,292 feet with superficial area of 220. There are two separate cells with a cubic capacity of 1,700 feet and 100 feet superficial area each. The latter have been but little used during the year. The prisoners having been few, the lock-up room has generally been sufficient.

Marches.

13. The return march from the Poona camp of exercise occupied 23 days, namely, from 26th December to 17th January—the route taken being that by Násik, to which station from Poona the road lies along the eastern slopes of the Ghâts, many small spurs of which it crosses. The weather experienced was very variable; on the whole the temperature was high for the time of year, but it was occasionally very cold at night. Some cases of fever complicated with chest affections and also a few cases of dysentery occurred during the march. All of them, however, did well, and the regiment returned to quarters in good health.

Hospital and its Surroundings.

14. The hospital is situated below the lines, and between them and the river, from which it is distant about 150 yards. The bazaar approaches to within 100 yards on one side (the south), and the Gowlewara village is distant 200 yards from it on the north. It is a stone building raised on an 18 inches' plinth, and consists of one ward, 96 feet long by 22 wide, with closed verandahs, 10 feet in width, surrounding it. The verandah on the eastern side (that towards the river) is divided into dispensary and store-rooms; on the other three sides it is uninterrupted. The ward is paved with dressed stone; the floor of the verandah is made of earth, with cow-dunged surface.

Ventilation.

15. The building is most efficiently ventilated by means of a sufficiency of doors and windows, and three large openings through the roof-ridge. The temperature of the ward at sun-rise averages 3·5 degrees only above that of the open air.

Over-crowding.

16. The ward generally affords sufficient accommodation for the sick of the regiment. For the past year the average cubic space to each patient has been 2,595 feet.

Accommodation and Defects.

17. The verandah is allotted to staff patients, viz., sick men of the police; occasional cases of severe sickness, accidents, &c., occurring in the bazaar and camp generally; and patients sent for observation or treatment by the civil authorities. A small separate ward in the hospital compound, for treatment of cases occurring in the regiment which it may be necessary or desirable to separate from the other patients, is much required—the verandah, as above noticed, being in constant use for other purposes.

The present quarters for hospital servants are insufficient for their accommodation, there being eight rooms only for the establishment of 16. Quarters for two 1st and six 2nd class servants are required.

Conservancy.

18. The hospital latrine is a building, 32 feet in length by 17 wide, in rear of the hospital, and connected with it by a covered way. It is ventilated by 8 brick lattices, each 3 feet 8 inches long by 7 wide, four in the east and four in the west wall. It is fitted with ten wooden seats, set in a plaster platform, 1 foot 6 inches in height, running the length of one side, with a channel for urine droppings

on the floor in front of it. Dammered receptacles are in use; deodorization is thoroughly effected by dry earth, and the sweepings regularly removed to the further side of the river by the hospital sweepers. I have by frequent personal inspection satisfied myself that the system of dry-earth conservancy is carefully carried out, and believe that, provided only plenty of earth is used, no better one could be adopted.

A great improvement in the latrine might be easily effected, and at a small cost, by the substitution of simple low partition walls over the receptacles in place of the high seats at present in use. The arrangement, besides being more suitable for native use, would afford greater facility both in the application and removal of the earth from all surfaces tainted by the deposits.

Hospital Water-supply.

19. The sick in hospital are supplied with water by the hospital bheesties from wells used for drinking purposes in the lines. A badlah, hung on a triangle in front of the hospital, is also kept filled from the same source for their use.

Sickness, Mortality, and Invaliding.

20. The admissions into hospital in the year were 334, a percentage to average strength of 54·3. The numbers contrast favourably with those of the previous year, when the admissions were 399, and the percentage of treated to strength 62·8.

There has been but one death. One insane was sent to the Colaba Lunatic Asylum, three men went on sick leave to their homes, and four were invalided. Of those invalided three were cases of chronic bronchitis, and one of chronic rheumatism, the result of scurvy contracted at Tanna. Two of the three sent for change to their homes, returned to duty within the year; the other (one of the cases of chronic bronchitis above mentioned) was invalided from Bombay.

The sickness for the year, grouped under the chief headings of the annual return, together with that of the previous year, is given below :—

Diseases.	General Diseases A. and B.	Nervous System.	Eye.	Respiratory.	Digestive.	Urinary generative.	Cellular Tissue.	Cutaneous.	Injuries.
1873	179	4	23	22	54	4	20	29	42
1874	144	9	40	14	27	8	9	31	47

The chief decrease in the number of sick is observed under the head of general diseases, and has resulted from the little prevalence ot intermittent fever. The number of cases of fever has not only been small, but, with the exception of a few which occurred during the march from Chinchwad in January, and which were complicated with chest affections, they have been generally of a mild and tractable nature. In no case has hepatic or splenic mischief resulted, nor has any affection of either of these organs come under treatment during the year.

Next to fevers the greatest diminution in numbers is apparent under the head of diseases of the digestive system. In 1872, during the time that the supply of water in the line wells ran short, necessitating a recourse, by the sepoys, to the river-bed for drinking water, the high ratio of admissions from diseases of the digestive system was the subject of remark; and though none of them were characterised by any special symptoms, yet supplies of all articles of diet being at the time both abundant and good, their prevalence seemed attributable to the above cause. The present decreased ratio of these affections observed, may, I think, be fairly attributed, in a great measure, to the improved water-supply. In 1872 they numbered 57, in 1873 the admissions were 46, and in the past year but 24, classified as under :—

Years.	Dysentery.	Diarrhœa	Colic.	Dyspepsia.	Total.
1872	20	16	15	6	57
1873	23	15	3	5	46
1874	13	4	2	5	24

Of the 13 cases of dysentery admitted in the past year, 6 occurred in January during the return march from the camp of exercise.

Principal Causes of Sickness.

21. The chief influences affecting the sick list, deducible from the monthly returns for the year, have been as follows :—

1st. General increase in number of sick consequent on exposure and fatigue during the march from Chinchwad in January.

2nd. Heavy rain-fall succeeding the dry hot months.

3rd. Cold and dry breezes in October and November succeeding the soft moist atmosphere of the previous rainy season.

Causes of Mortality.

22. The one death in the return was, as above noticed, from valvular heart disease.

Mortality according to Race.

23. The patient was a Mahomedan, a bugler of between 19 and 20 years' service. He was a spirit-drinker and ganja-smoker.

Influence of Rain-fall.

24. The rains were above the average, and set in early. The first heavy rain fell during the last week in May, and by the middle of June more than half the usual amount of yearly rain-fall of the districts had been registered. From the 20th June to 21st of July the fall was very heavy. In August less than 2 inches fell, and during the subsequent two months between 6 and 7 inches were registered. In September the weather was very oppressive until the 24th of the month, after which date breezes from the east and north-east became pretty constant.

The influence of the rain-fall upon health was at no time very marked. Some cases of conjunctivitis were coincident with the first falls in May. In June a few cases of ephemeral fever seemed attributable to the dampness of the season, but the total of sick during this month was, with the exception of that for April, the lowest of any in the year. In July and August there was some increase in sickness—in the former month chiefly from febrile affections, and in the latter from the prevalence of conjunctivitis.

In the following table are given the total admissions and percentage of treated to strength during the hot season with those for the succeeding three wet months :—

Total Admissions.	Months.					
	March.	April.	May.	June.	July.	August.
Total admissions...	19	12	28	17	31	25
Percentage of treated to strength.	3·6	3·9	6	5·3	7·2	6·6

This gives an increase in percentage of sick, as apparently due to effects of rain-fall, of 2·4 for the three months.

Epidemics.

25. No case of cholera or small-pox has occurred during the year.

Vaccination.

26. With the aid of the bazaar, from which children and infants are collected and brought to the hospital weekly by the bazaar peons, a system of arm to arm vaccination has been maintained in the regiment without interruption throughout the year.

General Health and Physique of the Men.

27. The general health of the men is excellent, and their physique generally good.

Resumé.

28. The steady decrease in sickness and the general good health now enjoyed by the men is an expression of the salubrity of the station and an outcome of the regiment's continued residence in it. The percentage of sickness of 56·5 only in the past year forms a pleasant contrast with that of 1871, the last year's stay of the regiment at its previous station, Mehidpur, when from an average strength of 357 there were 723 admissions into hospital from fever alone. The absence, from the return for the past year, of any case either of hepatic or splenic disease has already been noticed.

29. The studies of hospital apprentices are regularly supervised, clinical instruction and in their duties generally being also given them as opportunity arises.

Staff and details at Assirghur.

Assirghur.—In medical charge of Surgeon-Major F. R. O'Kearney; Strength, 120.

1. The detachments here during the year were :—

Location and Movements of Corps.

The detachment, 16th Regiment N. I., from 1st to 26th January; average strength, 120.

The detachment, 4th N. I. Rifles, from 26th to 31st December; average strength, 147·75.

Garrison staff and details stationed here during the year; average strength, 61·75; European officers, 6·50.

2. The detachment, 16th Regiment N. I., occupied the "native lines" from 1st to the 26th January, when they moved into camp pitched near the flag-staff, close and convenient to the "native lines," which latter were, after inspection, immediately occupied by the incoming detachment of the 4th N. I. Rifles; the latter marched *viâ* Mhow direct from Baroda, the head-quarters of their regiment.

Detachments.

The detachment, 16th Regiment N. I., left the station the morning of the 28th January, in marching order for Mhow, to rejoin regimental head-quarters at that station. The detachment, 4th N. I. Rifles, succeeded, and were quartered here during the remaining part of the year.

3. The "native lines" are situated at the western end of the fort, adjoining the old cemetery (now closed up), and close to and between the Sepoy Tank, the ramparts and scarp, and along the southern side of the fort; they thus occupy an open space lying between the Sepoy Tank and scarp= 356 × 156 square feet. The "huts" are old closed up "pendalls" in a good state of repair, but primitively built, for the most part, inside, of a temporary structure of mud and wattle; the floors are "moorum," generally raised from a foot to a foot and a half from the ground. They (the huts) are, though small, dry even in the monsoons, being built on sloping rock, with little or no sub-soil; they are deficient in light and ventilation, having no windows, upper ventilation, or no sanitary exit requirements beyond the door, through which air, light, ventilation, smoke, as well as all domestic inmates, &c., have to pass. There are no verandahs, and these cannot be added, in default of space, due to the proximity of the blocks to each other. There are no "subsidiary buildings" such as cook and ablution rooms, and, therefore, all domestic arrangements, such as cooking, washing, &c., are confined to the limited quarters available, these being much more restricted when each man with his wife and 2 or 3 children has to occupy a room about 10 × 8 × 8 feet. The quarter-guard (18 × 15 × 9 feet) occupies part of one of the front pendall blocks referred to, and is sufficient for its purpose; the floor is paved. It has one small barred window and a wooden door; adjoining this is the solitary cell—size, 19 × 10 × 8 feet, and much the same as the quarter-guard described.

Lines.

Space, &c.

Ventilation.

The garrison and detachment latrines are situated about 100 yards south-east of the lines, and divided off for males and females—being built on a principle of dry conservancy, which, with the natives, is carried out as far as possible, and they seem to answer sanitary requirements; they are tiled, with a raised roof open along the top sides for free exit and entrance of air, light, and thorough perflation. The sewage of lines and latrines is removed daily in air-tight receptacles without the fort (*vide* seq.)

4. Of these there are two, the upper and lower bazaar. The upper is the smaller containing a few shops, and from 50 to 60 inhabitants; the lower, or Petta Bazaar, is at the bottom of the hill. It is a large and flourishing village, with a population of about 2,300, and affording among its many shops, Banias and other traders and trades-people, ample supplies of the common necessaries and country grains, oil produce, and all other native food, clothing, and requirements.

Bazaars.

In the hot weather, however, there appears a marked deficiency of green food and vegetables, which are then often in vain sought after by the sepoys.

It is suggested that, perhaps, the Commissariat could be got to supply from elsewhere the few green vegetables, &c., which are considered essential to the simple food of the natives. This want is annually felt from the end of March till the end of June, during which period the whole country in the immediate vicinity becomes an unproductive and arid waste, and suffers annually from drought, there being scarcely more than one or two wells left to afford water for some part of that trying time of year.

Neighbouring Villages.

The neighbouring villages more distant from the hill, and which contribute, to some extent, towards the marketable commodities of this place, are: Chulkhan and Jhiris, lying south, and distant 6 miles *viâ* Burhánpur; Chandni, S. E. Railway Station, 7 miles; Shewell, east, 10 miles; Boregaon, north, 10 miles, and on the main trunk Mhow road.

Drainage and Tanks.

5. The "drainage" generally is open and good over the rock. There are four tanks used for drinking, cooking, and bathing purposes. One, called Suckur Bowri, is set apart specially for Europeans, as this contains the only filtering well with "potable water" on the hill; the other tanks are used by the natives, the water for drinking being simply roughly filtered through a cloth or other material. The water when drawn from these reservoirs is exclusively reserved for drinking, cooking, and bathing purposes. There are no "washing or bathing tanks" on the hill, as all water required for use must be drawn, and when once used cannot return but is used for watering soldiers' gardens, or otherwise got rid of so as not to foul or contaminate the water of any of the tanks. These latter are well stocked with fish, tortoise, &c., together with a species of *pistia stratelotas* and a few other water-plants supposed to be useful for purifying the water.

The tanks, being open, must receive a good deal of vegetable and organic matter, not only in solution during the rains from the surface water which feeds them, but throughout the year from general exposure, more particularly to the fall of leaves and other vegetation, dust, &c., near or adjoining those tanks. These leaves, however, are scrupulously removed when accumulations form; but fouling of water to some extent must result from their partial decomposition.

Conservancy and Sanitary Arrangements.

6. The general sanitary station arrangements have been as satisfactory as can be expected. The "dry-earth system" of conservancy is carried out in all the detachment, garrison, and other latrines of the fort. The ablution water used by natives tends, it is feared, in some measure to defeat the good results otherwise obtained from the dry-earth system; but as the cleanliness of these places is strictly attended to in this small and restricted space, and an orderly daily told off who is responsible that such is daily carried out, no bad effects have been observed to follow from the use of ablution water, which the natives cannot, it is said, be prevented from using. To this, however, I am inclined to demur, as I see no reason why, if these ablutions be so requisite, they should not be observed in a separate compartment close by, where the ablution water after use could be collected, and not allowed, as in this instance, to mix (in ever so slight a degree) with the dry earth, the sanitary effects of which latter must necessarily, under such circumstances, be to some extent neutralised by commixture with water in any quantity, however small. It is, however, stated that the native sepoy cannot be made to adhere to this form of procedure suggested, though, I may add, it has been successfully carried out for years when the convict jail was here.

The latrine refuse to be removed is daily collected in air-tight receptacles, being mixed freely to dryness with earth, and conveyed away to a mechanical apparatus for lowering, constructed from a shaft in connection with the "Sallie Porte" forming part of the seven gates, the eastern entrance to the fort; from this upper stage it is lowered and made to descend about 80 feet through this shaft on to a platform of dry earth, and thence conveyed on men's shoulders to a distance of 160 yards south-east and without the fort, near to a spur and declivity *quo foras ejicitur*. This latter plan, in my opinion, is open to objection, as not being buried or covered up daily with dry earth, both of which alternatives, however, it seems, are either impracticable or very difficult with the rocky soil of the place. The winds are also infrequent from this quarter, and it is hopeful that improvements will ultimately be effected if found necessary.

Water-supply.

Imperfections.

Source of Impurity.

7. The water-supply of this fort, being derived from four tanks, is wholly dependent on the annual rain-fall, which is to some extent precarious—23 inches only having fallen in one year (1871). The troops, &c., having had, in the hot weather, to obtain supplies of drinking water (of a very questionable quality) from a well down below, and at a considerable distance from the foot of the hill, the quantity of water in the tanks, the area of which is 163,000 square feet, could, I think, be considerably augmented and improved, were the deep mud and silt (10 feet or more in some) removed, and the tank staunched and plastered or cemented, &c., at leakage levels in the dry weather; and the water of none being fit for drinking or cooking unless most carefully and elaborately filtered, it would seem to follow that, to obtain good and potable water, a filtering well or efficient apparatus would appear a *sine qua non*, if not in all, in more than one, as at present the "Suckur Bowri" is found insuf-

ficient, even for Europeans, who drink only of this water. This well runs low every hot weather, and would, doubtless, soon be emptied and drained (as occurred before), were not troops, officers, and residents put on allowances to check and limit the supply, which is usually much below the daily increasing demands made thereon during the hot weather. The deficiencies have reference to the tanks themselves as well as to the quantity and quality of the water therein. There appears to be no doubt that the amount of surface water collected annually would be, if not doubled, vastly increased by more general use of catch-water drains to collect the rain-fall from all the available sources and surface of the hill's summit (estimated at 400,000 square yards) so as to convey it into the adjoining tanks. Under present circumstances a considerable amount of water is allowed to flow off by the sides and ramparts of the fort, which could, it is thought, without much difficulty or expense, be conveyed into the tanks. These latter reservoirs seem to leak at high levels, and when replenished fuller than usual do not appear to retain the amount of water they receive, as considerable quantities leak through broken parts, and pass into the jungle. With the exception of the Sepoy Tank, cleaned out some years back at the recommendation of the Sanitary Commissioner, Dr. Leith, all the tanks of the station appear sadly to want repair and cleaning out—the silt, filth, and mud in some being 10 or more feet in depth; if, therefore, the large space taken up by such filth and rubbish were utilised for water (the filth, &c., being removed, commencing with one tank at a time) I doubt not that the amount of water capacity in the tanks would be much increased, and quality also thereby improved. If these preliminaries were duly carried out, and tanks repaired, the following arrangements, in my opinion, would tend to improve the condition of the present precarious and very questionable water-supply of this place :—

Suggestions regarding.

(*a*) A deep filtering well is wanted for each tank, and where a well is not practicable, a masonry "village filter," or such equally good and permanent substitute, should be erected.

(*b*) The present well should be covered in and otherwise secured against the intrusion of leaves, dirt, dust, blown by winds, &c., and its surroundings secured against all possible fouling and pollution.

(*c*) To avoid defilement of the ground adjoining the tanks, bheesties' bullocks should be kept at a considerable distance from the sloping basins of the tank, and suitable platform stands (of good masonry) built and assigned for them while drawing water, so that excreta and animal refuse might not be allowed to soil the ground, or to flow into or in direction of the tank. The water, also, required should be conveyed by pressure, in pipes connected with reservoirs, to those places for distribution.

(*d*) Commissariat animals, such as mules, buffaloes, bullocks, and other farm cattle, should be excluded from the hill's summit and kept on the adjoining *plateau* below the Main Gate, as they only become a fertile source of defilement, during the whole year, to the only surface and receiving ground available for reception of the rain-fall.

(*e*) All filtered water from well or filtering apparatus should (where drainage cannot be simply effected by gravitation) be drawn up by force pump, and received into general reservoirs, connected by a system of pipes, so as to distribute the water by pressure into the barrack lines, &c., throughout the fort.

(*f*) The constant dipping of innumerable bheesties' "dôles" (sometimes of questionable cleanliness) should be forbidden (as calculated to foul, puddle, and disturb the small body of water in the shallow and only drinking well here) as soon as the better and cleaner provision of pump and apparatus, as suggested, is substituted.

Food—Quality of, and whether abundant and cheap.

8. The simple food of the natives consists chiefly of the common grains and pulses of the country, viz. dhall, rice, jowari, bajri, and wheaten flour, &c. Average prices are as follows in this cantonment :—

Dhall	16 to 17	seers	per rupee.
Rice	8 to 10	do.	do.
Bajri	26 to 28	do.	do.
Jowari	30 to 32	do.	do.
Wheaten flour,	12 to 14	do.	do.
Tilli oil	4½	do.	do.
Ghee	1½	do.	do.
Beef, 1st sort	6	do.	do.
Mutton, 1st sort	3	do.	do.

The quality of these articles of food, including chillies, spices, onions, and green vegetables, are excellent, and both abundant and cheap. In the hot weather from March till June there is a scarcity of garden vegetables and green food (as mentioned) which could, it is suggested, perhaps with advantage be supplemented by the Commissariat, it being an important constituent of the simple native diet throughout the year. In every other respect the general diet and food of the native sepoy is as good as elsewhere. The usual hours for food are twice daily, viz. at 8 A.M. and 6 P.M.

Clothing.

9. The clothing made use of, consists of the usual cloth, regimental tunic, trousers, black woollen tôpi or cap, with or without "sowaye or puggree," and boots (Blucher's) without socks. On fatigue or other non-regimental duties they wear the "doputta" or head-dress, the "bundee" or banian jacket, and the "dhotee" for loins, or the "izaar" or trousers, according to caste. The bedding consists of one carpet or settringee, one rug or cumblee, and one sheet; these, though few, appear well suited for the native habits, the change of season, and time of year. The boots without socks lead necessarily to foot-sores and lameness and inefficiency, and should be supplemented with suitable inside covering like the European socks as worn by the soldier.

Duties and Effect on Health.

10. The duties are constant, unremitting, but light, consisting of parades four to five times a week, with one inspection by Commanding Officer. There are three garrison guards daily, demanding in all 12 men, 1 havildar, and 2 naiques. The guards are—the magazine guard, the State prisoners' guard, and 7-Gate guard; besides these, 6 orderlies daily are told off for various garrison duties.

Average number of nights in bed—native officers, 2; havildars, 6; naiques, 3·66; privates, 3·31; all of which duties appear to be beneficial to the general health of the troops.

Exercise, Amusements, and Occupation.

11. The chief exercises are wrestling, jumping and sword exercise, cooking, wood-cutting, and shooting in the neighbouring jungles; also card-playing, *pacheesee*, and native music.

Lock-up Rooms and Cells.

12. Only one lock-up room and cell, $19 \times 10 \times 8$. There are two small Jittie windows and a shutter door; the floor is paved—same as quarter-guard adjoining it.

Hospital and its Surroundings.

13. The garrison staff and detachment hospital is situated on the southern side and close to the ramparts and scarp near the south-eastern end of the fort. The building originally consisted of one block of pendalls—floor raised 4½ feet from the ground and divided into two small rooms $29 \times 10 \times 9$, a large ward $80 \times 10 \times 9$, a store-room, surgery, cook and bath-rooms, and 1st and 2nd class medical subordinates' and servants' quarters, of foregoing total dimensions $160 \times 20 \times 9$; to this is added an adjoining block for the use of the hospital when the latter becomes overcrowded. It is, however, in such a state of disrepair, so ill situated, and so primitive a construction, that for all practical purposes it is useless, especially for the treatment of sick, until it is adapted and improved according to requirements so as to render it conveniently habitable. The hospital itself is unsuitable.

Ventilation.

14. It is too low, narrow, ill-ventilated, too hot in the hot weather, and but little internal accommodation, as will be seen from the ward space afforded. The roof, though very low, is double-tiled, the floor is moorum beaten to a consistence, ventilation is deficient, as when windows and doors are closed at night or during windy weather there is no upper or other ventilation whatever, and the effects of bad and vitiated air are soon felt; the only ventilation together with the lighting of the wards are effected through small glazed lateral windows and half-glazed doors, *i. e.* when these can be left open.

Overcrowding.

Accommodation and Defects.

15. The general sanitary condition of the hospital, as far as circumstances admit, is particularly attended to, and no overcrowding is allowed to occur; for, when the wards become unable to accommodate the excess of patients, some are removed to the empty pendall block rather than permit of the wards being overcrowded, which otherwise not unfrequently would arise.

Improvements.

Requirements and Recommendation.

16. The Commander-in-Chief, Sir Charles Stavely, and staff visited the hospital during the year, and appeared also to agree with the Quarter-Master General that it was too small, low, narrow, and ill-suited for the requirements of the hospital. A vast improvement would be effected were one block, $160 \times 20 \times 9$, reserved exclusively for the use of the hospital, thus affording sufficient ward space, with surgery, store, bath, and cook-room accommodation; the other block should be con-

verted into quarters for 1st and 2nd class subordinates, by which means sufficient space would be given to all requiring it. This plan has long been recommended, and was duly sanctioned; plans, estimates, &c., drawn up; the amount, about Rs. 5,000, sanctioned for same; and then, regrettable to say, disallowed by the local committee, on the ground that it was better "to estimate for a new building." In my opinion, were the present building raised a few feet higher, and modified in a suitable sanitary manner, with good light, air, and ventilation, and with adequate verandahs at both sides, and suitable general ward, cook, bath, and store-room accommodation, and the ground floored or flagged, it would answer all reasonable local requirements, the whole cost being about Rs. 4,000 to 5,000; but, as it is now proposed, the expenses would exceed probably Rs. 50,000! The accommodation for 1st class hospital assistant and medical pupil is most inadequate and inferior, as already stated, sharing, as they now do, the small, low, and wretched domiciles of the 2nd class servants of the hospital establishment.

Conservancy.

17. The dry conservancy, &c., is well attended to, sufficient and like the other latrines of garrison.

Water-supply.

18. The water used for the hospital is obtained partly from the nearest tank, the "Mamoo Banja," and that for drinking use from the Sucker Bowri well. It is always carefully filtered, especially for medical and drinking use, with the aid of three chatties on a stand, placed one above the other; the upper one supplied monthly with clean and fresh relays of charcoal, sand, and gravel, which appear to filter and improve the quality somewhat of the water and render it fitter for drinking. During the year a specimen of water was taken from the "Mamoo Banja" Tank, and carefully filtered by the aid of a masonry filter (re-opened for trial), and which a few years ago proved a failure. The following will show, after careful filtration by this apparatus, what the result was, from which it will be seen that the water is decidedly bad, and, as stated by the Chemical Analyser, "was contaminated to a considerable extent with objectionable organic matter, and ought, therefore, to be condemned." The analysis, &c., was as follows:—

Report of the Analysis of a Sample of Water labelled "Assirghur, 18th December 1874. *Water drawn at* 1 *p. m. this day. Specimen of Water from a new filter erected in one of the Tanks of this fortress called 'Mamoo Banja.'" Tank arrived at the Laboratory on* 20*th December* 1874.

	Grains per Gallon.
Total solids dried at about 280° F.	18·20
Loss on ignition (blackening intense)	2·24
Chlorine	2·45
Sulphuric acid	1·24
Lime	4·70
Magnesia	1·00
Silica	3·08
Hardness before boiling (total)	7°00
After boiling (permanent)	2°80
Removable	4°20
	Parts per Million.
Ammonia—	
Free—In distillate from carbonate of soda: free	·31
Albumenoid—In distillate from permanganate of potash: albumenoid.	·89
Of nitrates and nitrites	2·40
	Grains per Gallon.
Oxygen—	
Total required by the water at 140° F. in presence of acid	·1449
Nitrous acid Nitrous acid	·0301

Color in stratum of 2 feet	White and milky.
Odour	Earthy.
Taste	Nil.
Re-action	Neutral. { Water somewhat turbid; clears on standing.
Sediment	Small in quantity, consisting mostly of minute disintegrated vegetable matter, in which high class of infusoria—viz. rotifers, vorticellæ, and paramæcia—are distinguishable.

19. The admissions and treated for this disease were 117, being equal to 45 per cent. of the total number of all cases of sickness admitted during the year. There were only 3 admitted for well-marked remittent fever—the ratios being, respectively, 79 and 2 per cent. to average strength. The number treated for ague this year, through considerably more numerous than usual (causes for which will be hereafter specified) yet were all, without exception, of a *mild* quotidian or tertian type, the latter predominating. They appeared to recur occasionally in the same individuals at long and irregular intervals, notwithstanding the use of the antiperiodics, which were continued for some considerable time after the attacks. Every case, without exception, yielded readily to treatment, the only occasional complications being slight congestions or enlargement of liver or spleen, or some slight derangements of stomach and bowels, which readily subsided with the disease itself. The cases of remittent fever were specially mild; the most urgent symptoms present were slight gastric irritability or cerebral congestions. None of the cases, this year, presented serious complication, and all were quickly returned to duty, the average number of days under treatment being 7. Of these were 48 cases admitted in the detachment 4th N.I. Rifles, of which 43 were discharged well to duty, and 5 had to be invalided, partly from this complaint and partly from general debility and long service, &c. The men of the detachment appeared more than usually subject to this chronic affection, consequent on having suffered considerably in general health (during their stay of three years at Baroda, the regimental head-quarters) from severe attacks of ague and dengue fever, which, seemingly, having produced considerable general debility, predisposed the troops to more or less severe and frequent attacks of this disease, which of all others, I believe, is the most troublesome, if not intractable, coming under the notice in this country of the Medical Officer. I am glad to record, however, that most of these cases were discharged well after more or less protracted intervals in hospital, while a few, on whom treatment proved wholly unsuccessful, had to be finally invalided, as never likely to be efficient for active service. The number this year is unusually great; but it must, however, be recollected that both detatchments here last year, viz., 11th and 16th N. I., had come from pretty healthy stations, and had not incurred the risk of a bad climate and the undoubted exposure to disease, which, it appears, the 4th Rifles had suffered from while at Baroda. Five cases were admitted; this is a form of catarrhal ophthalmia which appears here annually, especially during the rains, and is, apparently, caused by exposure to cold or alternations of temperature, to which, from the general debility consequent on the preceding hot weather, the systems of many are more liable to be attacked by this complaint. It sometimes here will assume an epidemic character, running from house to house, and confining its course chiefly to the children, especially the more weakly, despite all possible care as to contagion or infection; the cases were this year mild, and yielded readily to the simplest form of treatment. Average number of days under treatment, 11. One case admitted, a form of rheumatic ophthalmia; he was finally discharged well to duty. Of these 1 remainedand 3 were admitted; they occurred in the cold weather, in January and, after the rains, October and November; all simple cases of a mild sub-acute and chronic form, affecting the larger bronchiæ, accompanied with sub-crepitant rouchi, lasting only a few days. Average number of days before return to duty, 21.

Sickness, Mortality, and Invaliding.—Ague.

Chronic Rheumatism.

Conjunctivitis.

Scleratitis.

Bronchitis.

Pneumonia. One case admitted on the 26th of May with high fever and inflammation of the substance of right lung, together with the usual accompanying characteristic physical signs; the patient progressed favourably without a bad symptom, and was discharged well to duty on the 22nd of June. It is probable that the disease was caused and associated in some degree with previous attacks of ague, dengue, and the debility consequent thereon.

Hœmatemesis. One case was admitted under treatment; it is said to have been caused by a draught of cold water taken when the body was over-heated. It was, however, more likely to have been connected with prior derangement of the liver and portal vessels, which were evidently at fault and out of order at the time. The vomiting of blood was not large in amount, but was frequent during the day, and about one ounce at a time, dark and grumous in colour; it is probable there was also some associated splenic disorder, the result of former attacks of ague and debility. This patient, the hospital orderly, progressed favourably without an untoward symptom, and was discharged to duty in fourteen days.

Dyspepsia. Six cases admitted; all were of a mild and tractable form. The average number of days under treatment was 7.

Dysentery. Four cases came under treatment; of these 3 were discharged well to duty and 1 died. The symptoms of the 3 men discharged, were, for the greater part, mild. The case that died was an old standing one, admitted twice to hospital previously with extreme general debility, upon which supervened, some few days before death, a severe attack of dysentery asthenic, which carried the patient off notwithstanding every care. Treatment with this patient was of very little avail, not only on account of the severity of the case, but also owing to bad private habits, which he had succeeded in concealing until a short time before decease. Average number of days under treatment was 11.

Mortality.

Diarrhœa. Eight cases admitted, caused by errors in diet or cold, or change of temperature; they were all of the milder form, and readily yielded to treatment.

Colic. Three cases of simple colic, caused by cold in the early morning.

Jaundice. One case, admitted in October, was rather tedious and severe, and associated, in some measure, with debility (caused by previous attacks of fever and ague while at Baroda), which from a sudden change of weather and temperature appeared to have brought on a considerable degree of hepatic obstruction and congestion. There was, however, no pain or other uneasiness beyond some degree of nausea, vomiting, and subsequent anœmia and debility.

Recto-urethral Fistula. One case. This man had previously suffered from chronic fistula for many years; he was admitted twice with this complaint, each time after operation the fistula closing up, but bursting out afresh on the least change of general health. This latter appeared indifferent and very much below par, due presumably to result of frequent attacks of ague and dengue; he had ultimately to be invalided for chronic rheumatic arthritis.

Contusion. The 22 cases of contusion of feet admitted, were caused by the use of bad boots.

Sprain of Ankle-joints. Three cases admitted, all accidental and slight.

Fracture of Clavicle. One case, caused by an accidental fall at night.

In the garrison staff and details eleven admissions are recorded for ague, and one remittent fever. No special remarks are required thereon; they were all mild, and yielded readily without any unusually or untoward symptoms to ordinary treatment.

Splenitis. One case in a tent lascar, of old standing, accompanied with considerable enlargement and induration of spleen, with extreme general debility.

Bright's Disease. This man was first admitted as an old-standing case of splenitis like former, which was diagnosed on his admission, the spleen having been of considerable size, extending near to the middle and right side, painful on pressure, with some fever and acceleration of pulse. During my absence, on privilege leave, the Medical Officer who conducted the case apparently discovered that symptoms of albuminuria set in suddenly, and the patient died, it is reported,

in an advanced stage of kidney disease. There was no *post-mortem*, but I am inclined to think that the albuminuria was secondary to the former long-standing formidable organic lesions of the spleen, &c., whichhad existed for some years.

Snake-bite.

One case, admitted on the evening on 9th of August, had been bitten by a Foorsa at about 4 A.M.; he felt ill and giddy, and three or four hours afterwards went to the dispensary, where he got a few doses of ammonia; he was brought in the evening to hospital, where he died with considerable spasm of glottis and throat, only about a few minutes after his admission, having been scarcely able to swallow a tea-spoonful of medicine, which there was hardly time to administer before death closed the scene.

Women and Children.

Of these 161 cases came under treatment during the year, chiefly ague or fever, catarrhal ophthalmia, or diarrhœa. Of these there were 28 Europeans; the remaining 133 were cases referring to the native women and children, among whom 4 deaths occurred, viz., 1 in and 3 out of hospital.

A rather severe and obscure case of remittent fever in a child, six years old, accompanied with loss of speech, paralysis of tongue, and spasms of throat, came under treatment, and made, though slow, yet a good and complete recovery eventually.

Invaliding.

Eight men of detachment, 4th Regiment N. I. Rifles, were invalided, viz., 5 for "chronic rheumatism;" the remaining 3 were worn out from general debility and long service.

Principal Causes of Sickness.

20. The unusual number of admissions to hospital and sickness which prevailed, were due, 1st, to the general unhealthiness and indifferent physique of the detachment on their arrival here from the more unhealthy and depressing climate of Baroda, where they appear to have suffered largely from constant attacks of ague and dengue fever, producing, doubtless, considerable general debility and a predisposition to recurrences of these or other kindred complaints. These general causes operating on the native constitutions, probably under-fed and clothed and housed, &c., it is not to be wondered at that, with local malarious influences so rife (especially at certain periods of the year) at this station, the sickness should have been greater than usual as compared with the sick rolls of former detachments long located at and arriving from healthier and better climates, as in the case of 11th and 16th N.I. last year, 1873. These circumstances, together with the depressing influences caused by the recent epidemic of small-pox here at head-quarters, necessarily, it is presumed, have led to the increase of admissions and general sickness here; it is, however, satisfactory to think that, though in number great, the types of disease were by no means severe, and there has been recorded but one death from dysentery asthenic, which has been already clearly accounted for elsewhere. The sickness in the garrison staff and details, the officers, the European women and children, was small and slight as compared with foregoing; there has not been any excessive illness here, except perhaps among the native women and children, 4th N.I., which was simply due to causes already explained, with regard to which, as well as to the sickness of the men of 4th N. I. Rifles, probably less malaria locally, together with a higher degree of local sanitary and other hygienic influences when carried out, may subsequently be found materially to exert some degree of influence; for it is clear that malaria annually does exist here, and that sanitary and other hygienic influences are still capable of improvement.

Causes of Mortality.

21. The case of dysentery was due to a chronic state of general debility in a naturally weak and depraved constitution, debilitated from malaria and constant attacks of ague, dengue, together with the bad habits long contracted of opium-eating and ganja-smoking

Mortality according to Race.

22. In the detachment, 4th N. I. Rifles, the one and only casualty occured to a Mussulman, who died of dysentery.

In the garrison staff and details there were 3 Hindu deaths, viz., 2 Mahrattas and one Purdessee.

Influence of Rain-fall.

23. The influence of the rain-fall on health is generally pretty well marked, at this station The first fall of rain, called the "*chhoti bursat*," is succeeded by the more agreeable and gradual fall of temperature, accompanied with an appreciable degree of coolness and freshness in the season. After a short time, varying from a fortnight to three weeks, the character of the climate and temperature is more altered; it becomes cold, moist, and windy, with various electrical and other atmospheric disturbances.

Epidemics.

24. Ofepidemics there were none this year, with the exception of a short out-break of small-pox between February and April, which was confined to the women and children, and held in check by isolation of cases without the fort as they occurred, and speedy withdrawal of the detachment to camp at the Lall Bagh.

Vaccination or Re-vaccination.

25. The infected lines were left vacant for a few months, fumigated, and disinfected, and the detachment with families not allowed to re-enter till every trace of the disease, contagion, &c., had disappeared for some weeks. Frequent inspections were made of the detachment, 4th N. I. Rifles, and garrison for the purpose of discovering the unprotected. There were, however, not many, as during the year only 9 "successful" vaccinations were practised among the children between the age of 1 and 6 years.

Re-vaccinations were practised with apparent success in 33 cases—among the women 16, and children 17.

The out-break of small-pox, supposed to have been conveyed by clothes, &c., from head-quarters, where it had prevailed before departure, was in two cases of a severe and confluent form, but was confined wholly to the women and children, who were isolated from the troops, in the old palace building at Lall Bagh, from 17th of February to the 13th April. There were 12 cases in all in the detachment, 4th N. I. Rifles, and one in a boy connected with staff and details there. This epidemic spread no further, either in the fort, bazaar, or elsewhere, and was happily extinguished and soon stamped out by careful and stringent isolation of affected, and enforcement of sanitary measures connected therewith.

In the staff and details 8 were "successfully" vaccinated; all were children between the age of 1 and 2 years. In the petha 74 children were "successfully" vaccinated. The quality of the lymph supplied from the Poona and Tanna districts was, in some cases, at first unreliable, but sufficient was ultimately procured for all the purposes of vaccination required at this station.

General Health and Physique of the Men.

26. From the foregoing remarks on the general sickness and increased number of admissions during the year it will be seen that the general health of the troops, 4th N. I. Rifles, was by no means as satisfactory as in former years, for the majority of affected seemed to have suffered considerably from previous attacks of ague and dengue, &c., at Baroda where they were quartered "for about three years." The general debility and loss of physique consequent on a prolonged stay at the above-named unhealthy station have been shown to have been due to the excess of sickness and frequent attacks of illness, especially fevers (and those of malarious origin) and chronic rheumatism, to which latter five-eighths of the invaliding may be said to be attributable.

The general health and physique of the detachment, 16th N. I., for the short time of the year they were stationed here was satisfactory, and any illness connected therewith was very mild.

Special Observations.

27. It would appear very desirable in every case, and requisite, it is thought, in many, that the Medical Officer should be permitted, as a matter of duty, to make *post-mortem* (as in the case of Europeans) on most, if not all, of the cases of natives terminating fatally in his hospital. It is, of course, known that, when this is absolutely required for medico-legal purposes, it cannot well be withheld or refused by the relations, but it is equally a well-established fact that natives in general (and the up-country sepoy least excepted) have and usually urge strong objections, owing to prejudice of caste or caprice, to allowing any interference, beyond their own rites, connected with their dead.

Malingering.

Under this head there are no cases to record, but it has been found, during the past year especially, that many of the troops, on attainment of the modicum of service, *viz.*, 16 years, appeared most anxious to leave the service, even on the half-pay of an invalid, rather than continue on for their full pension. With this object they seem to try very hard to make the most of any slight ailments, and to get, if possible, admission to hospital, where they hope by exaggeration of their complaints, such as lumbago, neuralgic affections, chronic rheumatism, naively to persuade the Medical Officer how bad, how severe, and how incapacitating are the afflictions they are trying to make it appear that they suffer from. This year many such cases were brought to notice, which, of course, were returned to duty with a request not to show themselves again unnecessarily under pain of severe penalties. Notwithstanding every vigilance, however, it is feared

some do succeed in passing off slighter forms of ailments, such as the above and others which are exaggerated, and it is sometimes not an easy matter with the Medical Officer to draw a clear and distinct line between a chronic ailment exaggerated and one that is not; and there can be no doubt that the diagnosis of many cases is occasionally very obscure, and dependent somewhat in greater part, not only on actual symptoms but upon the character, standing, and previous medical history of the individual concerned.

Here again the medical "history sheets," such as are supplied to European regiments, and in charge of the Medical Officer, would prove invaluable, as without them it is difficult, if not impossible, to refer back and to elicit correct and precise information serving as a true and trusty guide to correct diagnosis.

If medical history sheets are necessary for European troops, there is no reason, apparently, why they should not be required for the native. The same remarks might apply to "general dieting" while in hospital, "bedding and clothing," &c., which, though expensive, it is conceived would tend much to the amelioration and comfort of the sepoy when ill, and check and diminish present rate of invaliding, and that want of proper *esprit de corps* which induces so many (apparently) to try and leave after their minimum rate of service has expired.

The subordinates, &c., connected with the garrison staff and details hospital, as well as of the dispensary in the petha, are the same as last year, and continue to maintain by their general good conduct, intelligence, and attention to duties, every satisfaction.

Resumé.

From the foregoing observations it will be seen that the "climate", though malarious during some part of the year, yet, on the whole, is good and mild, not very variable or subject to great extremes of temperature, and more or less conducive to health. That the "lines" and native pendalls are small, narrow, closely packed, most primitively constructed, and deficient in air, light, ventilation, and general sanitary advantages recommendable, yet all (including latrines) have been kept, as far as practicable, as regards conservancy and available sanitary arrangements, as satisfactory as can, under existing circumstances, be expected. That the "water-supply," especially as regards potable water, is both as to quantity and quality still most inadequate and questionable; that its tank reservoirs, the mode of collection, distribution, and filtration of water for drinking purposes are open to grave sanitary objections; the old and "*laisser faire*" principle is not considered sufficient to purify and render water potable and up to present standard sanitary requirements; that these sanitary objections should be remedied by early and judicious alterations as recommended; for, it is unnecessary to say, it has been long well known that the present supply of drinking water is neither sufficient to meet the wants of the garrison, nor capable of standing the test of ordinary analysis, the latter due to its being considered contaminated with excess of organic matter, as may be seen from (this and) many former analytical and other reports on this subject.

That the "food" is generally good, abundant, and cheap, but that in the hot season there occurs a lack of green vegetable food, which, it is suggested, might with advantage, as a sanitary measure, be requisitioned for and supplemented by the Commissariat from elsewhere.

That the "clothing," the "duties, exercises, amusements, and occupation" of the troops are generally good, moderate, and have proved not otherwise than beneficial to the general health. That during the march of the detachment, 4th N. I. Rifles, from Baroda, they (being predisposed) may have most probably imbibed malaria and contracted disease, thus occasioning, with other circumstances referred to, the unusual sickness and larger number of admissions than usual after arrival.

That the "garrison staff hospital" with the medical subordinates' quarters are, in sanitary respects, very defective and capable of considerable amelioration. That the conservancy and water-supply of this establishment have been particularly attended to, and maintained in as satisfactory and sanitary a state as circumstances would admit of.

That the "excess of sickness" which occurred in the detachment, 4th N. I. Rifles, was due to other and extrinsic causes beyond control, and not referable for greater part to endemic or other local influences peculiar to this station, and that these causes generally are to be sought for elsewhere.

That the general sickness in other corps, viz., in the 16th N. I. and garrison staff and details, was not excessive, and contrasts most favourably with that which appeared in the former detachment referred to.

That the "mortality" was due to natural causes and duly accounted for.

That the "invaliding," if not moderate, was not greater than in former years with other corps. That, with the exception of a short outbreak of small-pox, which was promptly stamped out, there were no epidemics or other than the ordinary and natural sources of disease to record.

That "vaccination and re-vaccination" have been practised with success in the detachment, staff and details, cantonment and petha bazaar; and that of the unprotected were remaining 15 only at the end of the year (infants, who either were too young or delicate to undergo the operation). That the "general health and physique" of the detachment, 4th N. I. Rifles, cannot be reported as favourable, but that of the other charges stationed here can bear a most favourable contrast in this respect.

How often instruction was weekly imparted to Medical Pupil.

31. The medical pupil (General No. 777) Mahesh Buksh Sing has been here since the 15th of April 1873, the date of his admission to the service. I am glad to report favourably of him; he is a well-conducted, well grounded, and intelligent lad. He is daily instructed in the general routine duties of the hospital, reading, writing, compounding, the dressing of patients, administration of medicines, the framing of returns, &c. He is also personally instructed and periodically weekly examined in materia medica, including the uses, doses, and general therapeutic application of medicines, elementary anatomy and physiology, and the ordinary principles of surgery and medicine, including clinical directions and instructions, while in the ward and visiting the patients.

ADMINISTRATION REPORT OF THE POONA DIVISION FOR THE YEAR 1874, BY DEPUTY SURGEON-GENERAL G. G. MAITLAND.

On the breaking up of the camp of exercise at Chinchwad, at the close of 1873, the head-quarter wing of the 4th Rifles at Baroda was ordered to Satara in relief of the 11th Regiment N. I. It arrived at Poona by rail on the 6th of January, and marched on Satara on the 9th, reaching that station on the 16th idem, where it has been ever since located. A strong detachment of the above corps, under orders for Assirghur to relieve a similar detachment of the 16th Regiment N. I., marched *viâ* Mhow on that fortress, and arrived on the 26th January. The 19th Regiment N. I. left the camp of exercise on the 26th December, and after a short halt at Poona marched again for Sholapur, where it arrived on the 13th January. No further movements in relief have taken place during the year.

Strength of Regiments.

The total strength of the native troops in the Poona division and Belgaum districts during the year was 8,197, which is 1,121 less than in the preceding year, 1873:—

The following table will show the strength of each corps in the command:—

Poona Division.	Strength.
1st Light Cavalry	420
Head-quarters, Poona Horse	295
Detachment	148
1st Grenadier Regiment N. I.	661
4th Regiment N. I. (Rifles)	350
Detachment, 4th Rifles N. I.	147
8th Regiment N. I.	665
13th „	613
15th „	614
17th „	579
19th „	652
Bombay Sappers and Miners	397
Belgaum Command.	
5th Regiment N. I.	575
Detachment, 5th Regiment N. I.	89
6th „	631
12th „	678

Poona Division.	Strength.
14th Regiment N. I.	594
Detachment, 14th Regiment N. I.	89

With an average strength of 1,121 less than in 1873, the admissions to hospitals from all causes have been proportionably fewer than in the year under report. The total of treated and died in each corps was as follows :—

	Treated.	Died.
1st Light Cavalry	436	3
Head-quarters, Poona Horse	186	0
Detachment „	37	1
1st Grenadier Regiment N. I.	643	4
4th Regiment N. I. Rifles	375	1
Detachment, 4th Rifles N. I.	268	1
5th Regiment N. L. I.	424	2
Detachment, 5th Regiment N. L. I.	9	0
6th Regiment N. I.	241	3
8th „	646	2
12th „	630	4
13th „	539	0
14th „	472	4
Detachment, 14th Regiment N. I.	21	0
15th Regiment N. I.	347	1
17th „	542	5
19th „	975	4
Bombay Sappers and Miners	350	1
Total...	7,120	36

These figures show that the percentage of treated to strength was 86·8, and give a death-rate of 4·4 per *mille* to strength, and 5 per *mille* to treated, which is slightly more favourable than last year's return.

Comparative Healthiness of Regiments.

The greatest number of admissions to hospital, owing to the prevalence of malarious fever in the months of October and November last, occurred in the 19th Regiment N. I., stationed at Sholapur. Out of a strength of 652, 975, or 149 per cent., came under treatment during the year ; of these 597 were cases of ague.

To the same cause also must be attributed the high ratio of percentage of treated to strength at the head-quarters of the 4th Rifles at Satara, and its detachment at Assirghur. The health of this corps had very much deteriorated by a long residence at Baroda, where it suffered much from dengue and intermittent fever.

The 6th Regiment N. I. whilst at Belgaum seems to have completely recovered from the effects of the malarious climate of Guzerat, as the returns show only 38 per cent. of admissions to strength, which is less than any other corps in the division ; but the ratio of deaths to treated is unfavourable, being 1·2 per cent.

The strength of the European officers with the above corps is 90. Of these 44 have been under treatment. The re-admissions were 16, but are not included in the above return.

Sickness and Mortality.

The general return of sick and wounded of native troops in the division under Sub-Division A. show that there were 88 cases from eruptive fever. Of these, however, only 8 were cases of small-pox, and all recovered.

Continued fevers, though less prevalent than in 1873, give 184 cases with 1 death. The majority of these 184 were treated in the 13th Regiment N. I., and the fatal case took place in the 19th Regiment N. I. at Sholapur. Intermittent fever has been very prevalent throughout the division, but its prevalence has been most marked amongst the troops stationed at Poona and in the 19th Regiment N. I. quartered at Sholapur.

The causes of the excessive malaria giving rise to a very large amount of Indian diseases, the Sanitary Commissioners in England believe, may find a solution in the damp huts and imperfect drainage of the native lines; but in this view I cannot concur, for the reason that we find that it is just in those lines where the drainage is most carefully attended to, and the huts are the best, that ague has been the most prevalent. At Sholapur the native lines are built on the crest of a hill admitting of good uniform surface drainage down to a large nallah to the north. The huts, built according to a standard plan, are erected on stone plinths of greater or less depth according to the nature of the ground, and for native houses are remarkably dry and almost impervious to rain; but, notwithstanding all these advantages, this regiment, with a strength of 652 men, received into hospital 601 cases of ague. This excess in admissions from fever in the months of October and November the Medical Officer attributes in a great measure to the change from the most equable climate of Bombay, where the regiment had been stationed for some years, to the dry climate of the Deccan, with the sharp east winds which prevail at that time of the year. That great alternation of temperature, with want of proper clothing to meet it, is one cause of the quotidian form of intermittent fever, I do not doubt; but the climate of Sholapur, at certain seasons of the year, is proverbially malarious, and regiments stationed there for several years suffer as much from ague as those recently arrived.

The handsome barracks built for the European Artillery at that station had to be abandoned owing to the great sickness which annually prevailed amongst the troops, and this periodical invasion of fever, I believe, was pronounced by Dr. Leith's Committee to be due to the drying of a large tank near the Moti Bagh garden, situated to the north-east of the barracks.

The regiments located at Poona, as I have before stated, suffered more from fever, with the exception of the 19th Regiment N. I., than those stationed elsewhere. But here I do not think the proclivity to ague among the troops can be in any way ascribed to imperfect drainage or damp state of the huts. The huts of the 8th Regiment N. I. for some time past have been reported in a bad state, and the ground on which they are built being nearly level, would not admit of the lines being properly drained. But the men of the corps have not suffered more than the 17th Regiment N. I., and had 62 fewer admissions from fever than the 1st Grenadier Regiment N. I., the lines of which are in every respect satisfactory.

The total number of cases of ague treated was 2,369 with 8 deaths, which is less than in the previous year, with a slght decrease in mortality.

Cholera.

Only one case occurred during the year. It took place in the 19th Regiment N. I. at Sholapur, and will be further alluded to under Sub-Division B. The number of cases treated was 792, with 2 deaths.

Rheumatism.

There was a marked decrease in the prevalence of this disease during the year. The greatest number of admissions and the only death occurred in the 12th Regiment N. I. at Dharwar, in consequence of the exposure the men underwent during the rainy season in building new lines. The detachment, 4th Rifles N. I., suffered much from the disease in a chronic form, the result of severe attacks of dengue and ague whilst at Baroda.

Syphilitic Disease.

The admissions from this cause were less than in the previous year, and no deaths are recorded. The men of the 1st Lancers appear to have contracted the disease more frequently than in other corps—in all probability owing to the proximity of the lines to the dirty village of Ghorpuri. The total number of cases that passed through the hospitals from this disease was 206.

Scorbutic Affections.

Scurvy still lingers in the 5th Regiment N. I.; the corps suffered much from the disease at Aden, and it has been more or less prevalent since the regiment returned from that station. During the year there were 26 admissions, which is 42 per cent. of the total treated in other hospitals.

Local Disease.

Under this head the number of admissions was 3,625, which shows a considerable decrease from the preceding year. Insanity gave only 6 cases. All the insanes have been transferred from the military hospitals to the Lunatic Asylum, Bombay.

Nervous Disease.

There has been a slight decrease in the admissions for diseases of this class; but the mortality is the same as in the previous year. Brow-ague, no doubt the result of malaria, furnishes 26 cases; epilepsy, paralysis, and hemiplegia, each 7 cases. The fatal case took place in the 17th Regiment N. I. from hemiplegia.

Diseases of the Eye.

Ophthalmia appears to have been prevalent the greater part of the year at Nagar. The admissions to the 13th Regiment N. I. hospital were 94; of these, 87 were cases of conjunctivitis. The 15th Regiment N. I. likewise suffered from the same cause in the months of September and October, ascribed to cold winds prevailing at that time. The total number of cases treated at the hospitals was greater than in the former year.

Diseases of the Lungs.

Nearly one-half of the admissions and more than half of the deaths from this cause occurred in the regiments quartered at Poona. In the 8th Regiment N. I. 101 cases were treated, but the report states they were chiefly mild cases of catarrh and bronchitis.

Heart Disease.

The admissions were slightly in excess of the previous year. Of the 29 cases treated in hospital, 12 occurred in the 17th Regiment N. I. at Poona.

Diseases of the Digestive System.

Diarrhœa and dysentery, though they usually form a large proportion of the cases treated under this class, have been by no means frequent during the year.

Diarrhœa furnished 129 cases and 2 deaths, the larger number of admissions and deaths occurring in the hospitals at Poona and Kolhápur. Dysentery has likewise been less prevalent than in 1873 the admissions showing a decrease of 140 and a diminished mortality of 2. The total number of cases treated was 170, with 3 deaths; of these the regiments at Poona supplied 80 cases and 2 deaths, or 48 per cent. of sick treated. But this is more favourable than in the preceding year, when the admissions rose to 145 in the Poona hospitals.

In how far the introduction of abundant supply of pure water from the Kharakwásla reservoir may have tended to diminish this tendency to bowel complaints among the native troops at Poona, I am not prepared to state; but I think the above return is strongly suggestive of such an idea, and regarding which further experience will determine.

Liver disease gave only 41 cases. The complaint was chiefly confined to the troops in the Deccan and Khandesh. The 1st Regiment Light Cavalry supplied 16 cases—1 death, and the 14th Regiment N. I. 9, with no death; with the exception of these corps, the hospitals in the Southern Mahratta Country furnished no case.

Diseases of the Urinary Organs and Urinary Generative System.

Under this class of diseases there were 145 admissions, chiefly cases of gonorrhœa, bubo, and orchitis; but the number treated was much fewer than in the previous year, especially gonorrhœa.

Diseases of the Cutaneous and Cellular System.

This group of diseases always tends to swell the number of admissions to hospitals. Abscess gave 171 cases and 1 death. The fatal case occurred in the 12th Regiment N. I., in which hospital 51 cases were treated. Of the 111 admissions from ulcus the same hospital supplied 40. This is explained by the men having been engaged during the year in building new lines. Cutaneous disease appears to have affected the native troops very unequally: in the 13th Regiment N. I. only 1 case is returned, whereas in the cavalry and 8th Regiment N. I. at Poona the admissions were 48 and 54 respectively.

Guinea-worm.

With the exception of the 12th Regiment N. I. at Dharwar this disease has not been prevalent amongst the troops. Of the 148 cases treated, 154 were admitted in the months of April and May to above regimental hospital; 1 is reported to have proved fatal.

Injuries.

Under this head a large proportion of the cases treated are of a trivial nature; but as they serve to keep the sepoy ineffective for days together, and the complaint itself is, I believe, preventible, I consider the subject is one deserving of remark—I allude to cases of contusion of the lower extremities, more especially of the feet, induced by the wretched, ill-fitting ammunition-boots at present worn by the native soldiers. Of the 872 cases of contusion that passed through the hospitals during the year, 617 are stated to have been of the lower extremity; and the concurrent testimony of all Medical Officers who have written on the subject is, that the injury is attributable to the very imperfect manner in which our sepoys are shod. The remedy for this, I think, is either that the men should be allowed to wear socks with the ammunition-boots, like the European soldiers, or the boot be discarded, and native chuppal or sandals supplied, specially when marching.

Regimental Lines.

New lines are now in course of construction at Poona for the 8th Regiment N. I., at Dharwar for the 12th Regiment, and at Kirkee for the Sappers and Miners.

They are all being built on a model which admits of ample cubic space in each hut. Ventilation will also be fairly carried out in the two former lines; but at Kirkee the only means for the admission of light and fresh air, when the door is closed, is by the roof—a plan which, I need hardly say, is faulty. The proper ventilation of sepoys' huts is a subject which has not received the attention which it deserves, and in this respect too much allowance, I think, has been made for the prejudice of the natives, who, as a rule, hate light, and dread the admission of fresh air to their dwellings; the result is, that the means of ventilation are left to the "chink-and-crevice" system so aptly described in the Kolhápur report. Another disadvantage which the line huts are exposed to, is over-crowding. A sepoy's hut is capacious enough to hold himself, a wife, and one or two children; but it is not an unusual occurrence for a man from up-country to afford shelter, for a longer or shorter time, to a family in addition to his own, and in this way to over-crowd his dwelling to a dangerous degree.

With few exceptions, such as at Kolhápur, the huts are built on stone plinths of greater or less height according to the nature of the ground. This keeps the floors dry throughout the monsoon, provided there is no roof-leakage; but in this respect they are not worse off than most native houses, the tiles of which after great heat shrink and become in a manner porous.

The drainage of the lines is also carefully attended to. Being built on rising ground, sub-soil drainage is never required, natural surface drainage being found, as a rule, quite sufficient to carry off both rain water and water used for ablution purposes.

Before leaving this subject I am desirous of again drawing attention to the insanitary condition of the lines occupied by syces and grass-cutters attached to the 1st Light Cavalry at Poona. This subject has already been brought to the notice of the military authorities, and also alluded to in former reports, but nothing has been done. The mass of hovels in which these people are living are composed of rotten grass and mud, situated on low ground requiring sub-soil drainage, totally destitute of light and ventilation, and many of them filthily dirty; and when it is added they contain a population of some 900 men, women, and children, it cannot be a matter of surprise if contagious diseases are here developed and propagated, as stated by Surgeon McAlister in his report.

The lines occupied by lascars belonging to the Ordnance Department, which are contiguous to the lines now in course of erection for the 8th Regiment N. I., are also in a dilapidated state, and not so clean and vigilantly supervised as they might be.

Water-supply.

The introduction of water from the Kharakwásla canal to the Poona Cantonment has already proved a great boon both to the European and native troops.

The analyses of the water as given in the reports from the 1st and 8th Regiments N. I. when compared with those submitted from the wells within the lines, show that for potable purposes the water is far more pure, owing to its freedom from organic impurities; and as the supply is now abundant, the line wells might with advantage be closed.

The wells used by the native troops at Dharwar appear to be infested with the *embryo* of the guinea-worm, but wells are being excavated in the new lines, the water of which is stated to be good, but I have directed samples to be sent to Bombay for analysis. The quality of the water found at other stations is reported to be good and abundant, with the exception of that in the fortress of Assirgarh, where it is stated to be in the dry season scanty. The analysis appended to the Garrison Surgeon's report also shows that it is not so good as

might be desired, in consequence of the presence of organic vegetable matter. I would, therefore, suggest that the native troops there located should be furnished with filters, both in the lines and hospital, and of the same description as those supplied to the European troops.

Hospital, Poona Horse.

The accommodation provided in this hospital, though sufficient for the daily average number of sick of fighting men, affords no room for the treatment of syces and followers of the regiment; and with the exception of a latrine and cook-room, subsidiary buildings there are none. Nor does the ground in the vicinity of the hospital admit of such buildings being erected. The present building was not built for a hospital, but as a quarter-guard of the regiment, and to such a purpose it is proposed by the Commandant it should again revert, and a new hospital be erected on a site I have selected to the eastward of the lines. Such a project is now under the consideration of the military authorities, and I trust it will eventually be carried out.

Hospital, 4th Rifles N. I.

At Satara there is no regimental hospital, the sick being treated in a hired bungalow. The building has been found to be in every way unsuitable to such a purpose, and in the opinion of the Executive Engineer, owing to its dilapidated condition, is incapable of any permanent improvement.

As stated in my former report, a properly appointed hospital is urgently required at this station.

Hospital, 8th Regiment N. I.

When the new lines are occupied, they will be found too far from the present hospital; but, apart from the question of distance, the position and internal arrangements of the building unfit it for a hospital. It is in too close proximity to the quarters occupied by the ordnance conductors and their families, and it has been found that, on the occurrence of small-pox or cholera in the regimental lines, tents or grass huts could not be erected near the hospital without endangering the health of those occupying the surrounding buildings. The hospital, moreover, is still, incomplete.

There is no dead-house, no separate contagious ward, nor even a wash-house. The cook-house and other subsidiary buildings are built so close to the hospital as greatly to interfere with the proper ventilation of the building, more especially of the east ward, in which a fatal case of cholera occurred in 1872.

Under these circumstances a committee, which was appointed to report on the subject, recommended that a new hospital should be erected, and have fixed upon a good site, about 150 yards to the west of the new lines.

Hospital, 1st Grenadier Regiment N. I.

This hospital is in good order and commodious. The only suggestion I have to offer here is, that the 2nd hospital assistant's quarters and sweepers room, which were accidentally destroyed by fire last month should be rebuilt without delay.

Hospital, Staff and Details, Assirghur.

Is a badly constructed, ill-ventilated, and incommodious building. The estimated cost of converting the present building and the adjoining block into a suitable hospital is Rs. 5,000, which sum was sanctioned; but a local committee, thinking it would be better to erect a new hospital on a different site, the project was abandoned, and I presume nothing further will now be done in the matter until the subject is again brought prominently to the notice of the military authorities.

Other regimental hospitals in the division are, as a rule, well-constructed, substantial buildings, and in good repair; therefore no special mention need be made of them in this report.

Conservancy.

The dry-earth system of conservancy, as carried out in European barracks and hospitals in India, is found to answer well, but every attempt to adopt this system in the latrines used by natives has until lately in a measure failed, owing to the custom in force amongst them of using ablution water. The subject is one that has engaged the attention of authorities at Jubulpur and Cawnpur, and the difficulty surmounted by the plan of building separate ablution places within the latrine, the water from which is conducted away to tanks outside the building. From an extract of a report, dated Jubulpur December 1871, the plan appears to have proved very successful Deputy Surgeon-General Tressider states that, in company with the Sanitary Commissioner and local authorities of Jubulpur, he inspected that city and found "all the latrines, old and new, in good condition, and as clean as could be expected. Earth sewage was fully in use, and separate ablution places in each latrine. All these places were free from smell, and all were quite dry, and it is evident that natives have taken most readily to the plan of separate ablution places, for nowhere could water be found about the place, except where it was meant to be."

The only objection that could be taken to this plan, and I fully admit it is one, is the distance that a sitter is obliged to traverse before reaching the place of ablution. With a view of obviating this inconvenience, Lieutenant-Colonel Finch, Executive Engineer at Poona, has drawn out a plan, which is a modification of the Jabalpur arrangement, by which ablution platform space is provided closely adjacent to, and in equal privacy with, the latrine seats. This I consider a very great improvement; and, moreover, when it is stated that such a latrine can be constructed at half the cost of one on the present standard plan, it certainly ought to commend itself to the military authorities.

It is this plan I am desirous to see carried out in the new hospital and lines now being built for the 8th Regiment N. I. at Poona. But unfortunately it has not received the sanction of the military authorities, on the ground, as stated in the Quarter-Master General's letter dated 3rd October 1874, "of its being too complicated for the successful adoption by native troops." To this I can only say that, if the Jabalpur plan of latrine, with all its defects, can be successfully carried out in a large and populous city, it goes far to show that Colonel Finch's modification of it would prove neither difficult nor too complicated for successful adoption by native troops.

The latrines of the 1st Grenadier Regiment N. I. and 17th Regiment N. I. might likewise be altered and adapted to the new system of conservancy, for the present buildings are in a very unsatisfactory condition. The walls and floors are saturated with urine and ablution water, and are at times very offensive, and cannot be but injurious to the health and comfort of those living in the lines, in which they are placed, but a short distance and to windward of them.

In the lines of the Poona Horse there are no latrines, public or private. The purposes of nature appear to be performed on the ground in a corner of the enclosure attached to each hut, there being no receptacle to contain the liquid and solid excreta, a practice which is highly objectionable, and brought to notice by Surgeon Gordon in his report. Dr. Gordon recommends latrines being built on the standard plan, provided with necessary pans, &c. Such a project ought, I consider, to be carried out without delay

Trench conservancy is adopted in the lines of the 14th and 15th Regiments N. I. only. In the latter corps the trenches for want of space are brought too near the lines, and it is this cause, I have no doubt, which induces a large percentage of the occupants of the lines to resort to the nallahs and fields, as stated in Dr. Burrow's report. In all other respects this method of conservancy works well.

Vaccination has been very carefully and persistently carried out at all the hospitals in the division during the year, and, as far as it can be ascertained, it is believed that not a child, save those of such tender age as to render the operation unadvisable, remained in the lines at the close of the year unprotected. Re-vaccinations are not so numerous as they were in the two preceding years, when the subject was especially taken up in order to elucidate certain theories regarding the success with which it was attended in another Presidency.

GENERAL OBSERVATIONS.

1st Light Cavalry.

The Medical Officer's report shows very clearly that the general health of the corps has been steadily improving since its arrival at Poona. The admissions from malarial fever have decreased from 298 in 1872 to 100, and diarrhœa and dysentery from 68 to 25 in the past year. The deaths in hospital have been three, which is a decrease over the previous year of one. Eleven men have proceeded on furlongh, and no deaths among them are recorded.

Dr. McAlister in his report enters very fully into the subject of defective construction and want of proper ventilation of the men's huts, but remarks that, notwithstanding all this, the sowars and their families have enjoyed a remarkable immunity from any grave form of disease; he also brings to notice the miserable condition of the lines in which the syces and regimental followers are located, alluded to in a former part of this report.

Poona Horse, Sirur.

There is nothing particular to mention with regard to the medical history of this regiment. The general health of the men has been good, and no deaths have taken place since last report. The admissions from fever, diarrhœa, and dysentery show a marked decrease over the previous year. Surgeon Gordon in his report brings to notice the want of accommodation at the hospital for syces and followers, and the inefficiency generally of the building, which was originally built for a quarter-guard and gymnasium. The subject of the erection of a new hospital is now under the consideration of the military authorities.

There has been a total freedom from epidemic disease at Sirur and surrounding districts during the year.

Vaccination has proved very successful. The sowars, Dr. Gordon states, being alive to its advantage, every facility is afforded in the performance of the operation. Consequently there is not a single unprotected child over four months of age in the cantonment.

1st Gr. Regiment N.I., Poona.

The report from this regiment as regards sickness and mortality is more favourable than the previous one. The decrease in the admissions is due to malarious fever, which gave 274 cases against 322. The percentage of deaths is small, being about 6 per *mille* both to strength and treated. The principal causes of mortality arose from pneumonia and remittent fever.

Vaccination has been carefully carried out in this regiment, and all children in the lines considered fit, have been successfully vaccinated.

The observation made in Dr. Miller's report regarding his hospital accommodation is now of little consequence; for, since his report was received, the hospital and its out-houses, which were chuppered buildings, have been entirely destroyed by fire.

4th Rifles N. I., Satara.

The head-quarters of this corps arrived at Satara on the 16th January 1873. The men since that period, though not so sickly as when quartered at Baroda, have by no means recovered from the debilitating effects of a Guzerat climate. These remarks apply with even greater force to the detachment stationed in the fortress of Assirghur, the returns from which show that the ratio of admissions to hospital is higher than when located in Guzerat.

Surgeon-Major Ross justly complains of the want of proper hospital accommodation. The subject was brought prominently to notice in former reports, but with no result. The building is now vacated, and the sick are in tents on ground adjoining the compound. After a careful inspection of the bungalow, and receiving the opinion of the Executive Engineer on the subject, I consider it would be unsafe to allow the sick to return to it.

The Medical Officer in his report also alludes to the filthy state of the bazaar, which is under civil management, and which is deserving of attention owing to its dangerous proximity to the native lines; and, as European troops are now permanently quartered at Satara, this bazaar, which is in fact a cantonment bazaar, might with advantage be placed under military control; and in this way also proper supervision might be exercised over the bazaar prostitutes, who appear to be affected with syphilis of a bad type.

The station of Satara is badly supplied with water, and in the dry season it is obliged to be brought from great distances. One or two additional wells in the sepoy lines seem necessary.

Vaccination has been properly attended to throughout the year: 42 children and 17 recruits have been vaccinated. In the latter, 7 operations failed.

5th and 6th Regiments N. I., Belgaum.

These regiments have been stationed at Belgaum for the past two years; and although placed in exactly the same position as regards climate, position, and state of their lines and other surrounding circumstances, yet the returns show a marked difference in the general state of health of the two corps.

The 5th Regiment N. I., with an average strength of 575, gave 409 admissions to hospital, or a percentage of 71·1; whereas the ratio of admissions to strength in the 6th Regiment N. I. was only 37·4, with a daily average number of sick of 13·7 and 7·5 respectively

The deaths to strength in the two corps were almost identical, but the ratio of deaths to treated in the 5th Regiment N. I. was 0·52 against 1·24 in the 6th Regiment N. I. The Medical Officer of the 5th Regiment N. I. attributes the present indifferent state of health of the corps to the debilitating effects of dengue and scurvy contracted at Aden in 1871 and 1872. I concur with him in thinking that, although the general health of the corps is improved since its arrival at Belgaum, yet if put to hard work, or made to undergo the fatigue and exposure incident to a campaign, the sick list would be very large.

8th Regiment N. I., Poona.

The annual report is ably drawn up, and full of interest. Dr. Sexton's observations on clothing, enlistment, the existing system of invaliding, and evils arising from it, are all deserving of attention. But with regard to his strictures on the Contagious Diseases Act and working of the lock-hospital at Poona, I think they are too general; for I feel certain that the system is not carried out in a languid and feeble and perfunctory manner as stated by Surgeon-Major Sexton, judging from the

report received from the Staff Surgeon in charge of the lock-hospital. But this is a subject which will be again referred to in my report on these institutions. Dr. Sexton mentions, in his remarks on the special treatment of diseases, the success obtained by what is termed the antiseptic treatment of foul ulcers and sloughing wounds by means of carbolic and boracic acid and chloride of zinc, first brought into notice by Professor Lister of Edinburgh. His observations on the water-cure, "so extensively adopted on the Continent," I hardly think has been found to succeed either with natives or even Europeans in this country, the practice being apt to be followed by serious congestion of the internal organs.

12th Regiment N. I., Dharwar.

In the report from the Medical Officer he states that, owing to fatigue and exposure the men underwent during the monsoon months in building the new lines, and the prevalence of guinea-worm in the months of April and May, the general health of the corps during the past year has not been good; and the present physique of the men might also be better, though the number of serious cases has been few.

The daily average number of sick is high—30·8, and admissions to strength—91, with 4 deaths. The prevalent disease was guinea-worm, which gave 23 per cent. of total treated. Diseases of the Respiratory System and ague have not been frequent. From this latter disease there were only 57 admissions, which is 75 less than in the previous year.

Eight cases of small-pox have been under treatment; of these 5 were sepoys and 3 children in the lines, one of which proved fatal, an infant under two months.

Vaccination.—Seventy-four children have been successfully vaccinated. There were no re-vaccinations.

The new lines are progressing. Accommodation for a wing is completed and occupied, but another year must elapse before the work is finished, and probably another before the hospital is built.

13th Regiment N. I., Ahmednagar.

The report of this regiment is satisfactory. The admissions to strength, although greater than in the previous year, give a ratio percentage of 86, with no deaths. The only point to be remarked on in the report is the comparatively few cases of paroxysmal fever, and the excess of admissions from the febricular form. Of the latter there were 123 cases, and only 23 of ague. As regards the general physical condition of the men, Surgeon-Major Ticehurst considers it is not good, and attributes the want of robustness and vigour in the men to their living on bad and unsuitable food for the sake of saving money and sending it to their country; and also to another cause, viz. the number of relatives and friends, who are constantly coming on visits and living on the unfortunate sepoy. This practice obtains, I believe, generally throughout the Native Army, and is one to be deplored. That sepoys stint themselves of proper food for the sake of sending money to their families, does not admit of a doubt, and I very much suspect that not a few when wishing to invalid, resort to the same practice. At least, in my experience of invaliding boards, now of some years' duration, I can positively affirm that instances have repeatedly come before me of men reported "weak and worn out" who had voluntarily brought themselves to a state of semi-starvation for the purpose of gaining their ends. All this again points to the pernicious system of invaliding and pension now in force.

Vaccination.—The return of 88 successful primary and 17 re-vaccinations show that vaccination has been assiduously carried on during the year.

14th Regiment N. I., Kolhâpur.

The regiment returned to its station from the camp of exercise at Chinchwad on the 11th of January. During the year the general health of the corps has been remarkably good. The returns show a considerable decrease in the number of admissions, due chiefly to malarious fever being less prevalent than in the former year. There were 4 deaths, or an increase of 3 over 1873. Surgeon Hughes in his remarks on the movements of his corps during the last two years states that marching has by no means had a salutary effect on the general health of the corps, but the reverse, and deduces from this fact that, as a rule, marching cannot be so beneficial to native troops as it is stated. Dr. Hughes' arguments, I am happy to say, are not borne out by the test of experience, and I believe the circumstance of an unusually heavy sick list on the line of march would not have occurred, had the sick and really weakly men been left behind at Mhow and Satara. The condition of the hospital and lines is satisfactory, but proper quarters for hospital assistants are much needed, for they at present occupy the houses intended for 2nd class servants. Since last report a dead-house on a standard plan has been erected.

Vaccination has been successfully carried out during the year; four primary vaccine operations and 8 re-vaccinations have failed. With reference to a statement made by the Superintendent General of Vaccination, that the number of failures is large in regimental

practice, Dr. Hughes remarks that this may be easily explained "by there being but few arms to look at, the inspection is close, and cases about which there is the slightest doubt are entered in the unsuccessful column."

Judging from my own experience of district vaccination and my knowledge of district vaccinators, I should say that the result of vaccine operations, as carried on in regiments, is nearer an approximation to truth than the statements put forth, that thousands of the population are annually vaccinated, with only 2 or 3 per cent. of failures.

15th Regiment N. I., Málegaon.

The general health of the corps during the year has been decidedly good, and the return of admissions to strength contrasts favourably with that of the previous one. The only death recorded was from disease of the heart in a young man of intemperate habits and a ganja-smoker.

In 1872-73 Dr. Burrows states that, owing to the wells in the lines having run clearly dry, the men were compelled to resort to the use of the river water, which gave rise to a high ratio of admissions from diseases of the digestive system. The line wells have now been deepened, and a plentiful supply of good water has been obtainable throughout the year. The number of admissions has fallen from 57 to 24.

No cases of cholera or small-pox have occurred during the year.

Vaccination.—By means of peons bringing up children from the bazaar every week, arm to arm vaccination is reported to have been uninterruptedly carried on during the year.

17th Regiment N. I., Poona.

Ague has been very prevalent in the corps during the past year; the admissions from this disease alone were 207, giving a percentage of 40 to total treated. The ratio of percentage of admissions to strength shows a decrease of 22, but an increase in the mortality—the deaths in hospital being 5, out of hospital 3, against 2 in the previous year.

Under the head of rheumatism Surgeon-Major Straker alludes very forcibly to the practice, which I fear is pretty general in our regimental hospitals, of malingering, and states his belief that three-fourths of the rheumatic cases admitted are malingerers. Although I cannot concur in such a sweeping assertion as this, I am of opinion that the sepoy, as a rule, greatly exaggerates his ailments, and in some cases, especially those seeking admission just at the approach of the invaliding season, I believe feigns disease; and not until our system of invaliding is greatly modified, will this practice be discontinued.

Dr. Straker in his report strongly advocates what is termed the "sewage farm" system of conservancy; but I do not concur in his view, believing that the dry-earth system, pure and simple, is the best for adoption in this country, if carried out as it is done at Násik. In my opinion such a system will be found to be the cheapest and, I believe, in a sanitary point of view the safest that can be adopted in India.

Surgeon-Major Straker complains of our present system of education for medical subordinates, and failure in selecting men of intelligence for the department.

The system now in force, of sending youths to the Grant College after two years' probation at the regimental hospital, will, doubtless, prove satisfactory, but their preliminary education will still rest with Medicial Officers, who will be responsible that this important part of their duties is properly and efficiently carried out. The duty of selecting intelligent and fairly educated youths for the service is, and ever has been, delegated to examination committees; and if men unfitted for it are allowed to enter, the blame rests with Medical Officers, and not to any fault in the system adopted. The same remarks apply to those medicial subordinates of standing in the service who may be pronounced incapable, ignorant of English, and having no proper sense of their duties and responsibilites, alluded to by Dr. Straker. It is to the medical committee who recommended them for promotion to the higher grades that blame attaches.

Vaccination and re-vaccination are reported to have been assiduously carried on during the year, with the following result:—Primarily vaccinated 140, and re-vaccinated 60.

The regiment has been free from epidemic of any kind during the year.

19th Regiment N. I., Sholapur.

The percentage of treated to strength in this corps during the past two years has been very high. In 1873 it was 148·7, and in the past year it rose to 149·5; but, notwithstanding this large number of admissions, Surgeon-Major Cates is of opinion that the health of the regiment during the year has really been much better than it was in 1873, owing in a measure to the large number of sick treated being mild cases of intermittent fever, necessitating only a few days' treatment in hospital. Also, that, on the arrival of the regiment at Sholapur, many of the men are stated in the re-

port to have been in an anœmic cachetic condition with a marked scorbutic taint, especially the men of the Janjira Detachment; but change of climate and abundance of good food and vegetables have been the means of restoring them to health.

Vaccination has been carefully and persistently carried out. Of the 90 vaccine operations 61 have been successful. Of re-vaccinations there were 13 cases; 1 only proved successful.

Cholera.—The only case of cholera during the year occurred in this regiment. The man recovered. The case has been before alluded to as one successfully treated by the novel method of injection of chloral when in a state of collapse.

Bombay Sappers and Miners, Kirkee.

The only subjects mentioned in the report submitted by Surgeon-Major Davey which need be alluded to by me, are the situation of the new lines on the bank of the River Mula, and the water-supply.

The situation of the lines in course of erection I do not think has been judiciously selected. The ground is low, and its proximity to the river, the water of which at certain seasons is by no means pure, may, as stated by Dr. Davey, have a prejudicial effect on the health of the troops occupying the lines, especially in the autumn months, when malarial fever is usually prevalent.

Water-supply.

As I had some misgivings touching the purity of the river water, which the men now use for drinking and other purposes, I directed that samples should be sent to the Government Analyser, whose report, I am glad to say, was perfectly satisfactory. Water for the use of the troops will eventually be supplied from the Kharakwásla Canal, and arrangements are now being made by the Irrigation Department for that purpose.

The general health of the corps during the year has been good. The admissions to hospital have been considerably less than in the previous year, and the average daily sick shows a reduction of 3 per cent. The mortality has been slight: one died in hospital and one out.

Vaccination is reported to have been successfully carried on during the year.

Staff and Details, Poona.

The Staff Surgeon reports there has been a greater amount of sickness among the native fighting men and followers during the past than in the previous year, though the cases treated have been much less serious. The lascars appear to have been especially unhealthy; for, with a strength only of 257, 601, or 237 per cent., are stated to have passed through the hospital, with 1 death, and no reasons are given to account for this sickness. These lines as, I have had occasion to remark before, are in a bad condition, but it could be hardly otherwise when they are the property of the men, who are expected to keep them in a proper state of repair.

Europeans.

The number of European commissioned officers, non-commissioned, and warrant officers belonging to the Staff is 105: two of the former and one of the latter grade proceeded on medical certificate to Europe. One warrant died on furlough, and there have been four casualties at Poona—one of apoplexy, one general debility, one from disease of the heart, and one from enteric fever.

The number of women and children who have received medical aid in hospital was 9 and 6 respectively: out of hospital 196 and 321.

Vaccination was assiduously and successfully carried on: 1,043 children have been vaccinated, and the number re-vaccinated was 25—17 with success, 7 doubtful, and 1 unknown.

NORTHERN DIVISION.

Average strength present during the year	...	...8,362.
Average daily sick per cent. to the average strength	...	... 4·48.
Ratio of mortality per cent. to the average strength	...	... 0·63.

H. M.'s 3rd Regiment N. L. I.

AHMEDABAD.—In medical charge of Surgeon WALL; Strength, 642.

Location and Movement of Corps. 1. Ahmedabad.

Detachments. 2. Fifty-four rank and file on duty at the Political Agency, Sádra.

Topography and Physical Geography.—Soil. 3. The soil in camp is of a light sandy loam, gradually merging into richly cultivated plains.

Water. The rain-fall this year, 37·99 inches, has been much in excess of the average, which is about 25 inches. In consequence of this heavy fall, and the absence of artificial drainage, large portions of ground in and around camp were under water.

Drainage. The drainage is natural. The soil being very porous, readily absorbs the rain-fall water. In the lines small open shores carry off the rain-fall to neighbouring nallahs, which feed the river.

Effects on Climate. 4. During and after the monsoon the climate is very feverish, owing to the large amount of rank vegetation which springs up.

Lines—available Space. 5. The lines are well built and in good repair, and contain ample room for the regiment. They extend to the east and west on the south bank of the Sábarmati River, with streets facing north and south. The huts are not built on plinths.

Ventilation. Ventilation is by apertures in the walls, but there is no roof-ventilation.

Table showing the Size of Huts.

	Length.	Breadth.	Height.
Native officer's	25½	22	10
Havildar's	12	10	10
Sepoy's	10	9	10

Bazaar. The bazaar lies between the river and the lines. It is clean and well kept.

Neighbouring Villages. There are many small villages surrounding the cantonment—all as filthy as possible.

Drainage. The drainage in the lines is very simple. Each hut is provided with an underground shore running into an open one outside, and these discharge their contents into a larger open drain, situated parallel to and midway between the rows of huts. This arrangement cannot be considered satisfactory, but it is cheap and easily kept in order.

Tanks. There are no tanks in the lines.

Conservancy and Sanitary Arrangements. 6. There are two latrines to each wing—one for men, one for women.

The buildings are *pucka*-built, and the conservancy is on the dry-earth system. The latrines are cleaned out morning and evening, and the soil carried beyond camp limits.

Water-supply. Imperfections, Sources of Impurity, Suggestions regarding.

7. Water is procured from three wells and from the river.

The well-water is good, pure, and sparkling, but the river water is full of organic matter, and quite unfit for drinking. The sepoys and bazaar people wash along the banks, and the latter make a further and less desirable use of it.

If more wells were made in the lines, the sepoys might be prevented from using the river water. This suggestion has been made by Dr. Johnson in a former report.

Food—Quality of, and whether abundant and cheap.

8. Meat may be procured in the bazaar, but it is inferior in quality and expensive.

All kinds of grain and vegetables can be had in abundance, both in the city and bazaar; but, as the bazaar sellers charge much more for articles of food, the sepoys prefer going to the city on the weekly holiday, when they procure a week's supply at cheaper rates.

Clothing.

9. The material provided by the Clothing Department is good, and care is taken to prevent any tightness of coat across the chest and round the neck. It is difficult to make the present tunic look well and at the same time loose enough to give the men freedom for action; and the substitution of loose coats instead of tunics would add to the health and efficiency of the men.

The boots now worn are wretched; they fit badly, are unsightly, and wear out very soon. Shoe-bite is a frequent cause of admission into hospital.

The regimental carpets are too narrow, and the men cannot turn in sleeping without rolling off them. This might prove a cause of fever when the men have to sleep on the ground, as on a march or on escort duty.

Duties, and their Effect on Health.

10. The regiment has been employed on no special duty except detachments and escorts, and the men have not suffered in health from these duties.

The recruits when learning musketry suffered somewhat from fever.

Exercise, Amusement, and Occupation.

11. In addition to parades and drills the men have to walk to their respective guards in the city, a distance of over four miles. This has a beneficial effect, except on the feeble among them.

Fishing, shooting, and athletics are indulged in as much as possible, and an attempt has been made to cultivate a regimental garden. Sanction, however, to occupy a suitable plot of ground was not obtained till too late for operations this year. It is to be hoped that this desirable project may be carried out successfully next year.

Lock-up Rooms and Cells.

12. There are four cells, measuring each 10 by 10 by 12. They are well ventilated and situated on high ground on the banks of the river. They are somewhat too near the latrines, but I have never perceived any inconvenience from that cause.

The quarter-guard is 12 by 10 by 14, well-built, and situated in front of the lines. It might with advantage be larger.

Marches.

13. The regiment has made no march during the year; but a detachment of 54 men goes to Sádra, 24 miles, every alternate month.

Hospital and its Surroundings.

14. The hospital is *pucka*-built and tile-roofed, and contains two wards, two small rooms, and a bath-room. One small room is used for women and special cases.

It stands in a group of buildings consisting of the hospital for European troops, the two hospitals for native troops, the subordinate quarters, and a private house.

Ventilation.

15. The ventilation is good, by natural ventilation as windows and doors opposite each other, and by outlets in the roof.

Over-crowding.

16. There has been no over-crowding.

Accommodation and Defects. Improvements, Requirements, Recommendations.

17. The hospital accommodation is large enough for ordinary cases. No improvements have been made during the year. A privy and cook-room for the subordinates are required; also a dead-house between the two native hospitals.

A separate ward for women and children would be of great advantage.

18. The conservancy arrangements are excellent. The latrine is *pucka*-built on the dry-earth system; McDougall's powder is mixed with the earth. A sweeper is always present to remove excreta and supply fresh earth.

Conservancy.

Hospital Water-supply.

19. The water-supply is good, and obtained from a well close at hand.

Sickness, Mortality, and Invaliding.

20.

Percentage of treated to strength	...	143
Do. deaths to do.	...	0·3
Do. do. treated	...	0·2
Average daily sick ...	...	26
Invalids, No. 48. Percentage	...	7·4

Principal Causes of Sickness.—Conjunctivitis, Bronchitis, Hepatitis.

21. Out of the total number treated during the year, viz., 918, 376 were cases of ague, 61 of conjunctivitis, 34 of bronchitis, 20 dysentery, 75 contusion, boils 43, scurvy 32, lumbago 20, chronic rheumatism 22, hepatitis 2.

Principal Causes of Mortality.

22. Two deaths occurred: one from meningitis, the other from phthisis pulmonalis.

Mortality according to Race.

23. One death occurred amongst Hindu Hindustanis, the other among Mahrattas.

Influence of Rain-fall.

24. After and during the latter portion of the monsoon months the admissions into hospital from ague increased greatly.

Epidemics.

25. No epidemic occurred.

Vaccination and Re-vaccination.

26. Vaccination 49; re-vaccination 9.

General Health and Physique of the Men.

27. The regiment has enjoyed good health, except in August, September, and October, when out of a strength of 642 the admissions were, respectively, 117, 115, and 133, chiefly cases of ague.

The physique of the men is above the average of native troops.

Treatment of Disease when special.

28. The sulphate of cinchonidine has been largely used with not very encouraging results.

Special Observations.

29. As has already been observed, the want of a dead-house, and privy and cook-rooms for subordinates, is much felt.

The recruits suffer in physique from the system of having half their pay cut till the necessaries with which they are provided have been paid for. They are, in fact, half-starved, instead of being nourished sufficiently to sustain the heavy duties exacted. Most men grow and fill out during their first year, and require extra nourishment. If rations could be given them, the improvement in their physique would repay the expense.

Resumé of the whole.

30. During the year the medical staff of the regiment has been frequently changed, 2nd Class Hospital Assistant Purushram Sing being the only subordinate who has remained since last year.

The general health has been good, excepting a large increase of fever after the monsoon.

The regiment is fortunate in its lines and hospital, and food can be had in abundance and cheap in the city, about four miles from camp.

The chief number (29 out of 48) of invalids were men enlisted in the mutiny time, when probably it was difficult to enlist men equal to the present standard. The young men of the regiment are healthy and well developed.

Native Medical Pupil how taught.

31. When possible, instructions in surgery, medicine, materia medica, and English were given, besides clinical teaching at the bedside.

H. M.'s 9th Regiment N. I.

Ahmedabad.—In medical charge of Surgeon-Major R. Boustead, F.R.C.S.; Strength, 637.

The cantonment of Ahmedabad is the head-quarters of the northern division of the army. It is situate in latitude 23° 18′ north, longitude 72° 27′ east. It stands about 320 feet above the level of the sea, and is altogether very favourably situated. The extent of the cantonment has an area of 3 square miles. It is bounded on the west by the Sábarmati

River, on the north by the cultivated fields and grazing ground of the village of Horsole, on the east by the cultivation and fields pertaining to the village of Naroda, and on the south by the city of Ahmedabad and its environs. It contains within its area a population of 5,217 persons. The cantonment bazaar is a poor one, and very closely resembles most other camp bazaars, and it scarcely suffices for the immediate wants of the troops and residents in camp; it stands to the extreme north-westward of the cantonment on the south-eastern bank of the Sábarmati River, and contains 1,883 inhabitants. There are 364 dwellings and shops of a poor description, being 2·97, or nearly 3 persons to each house. The sanitary state of the cantonment bazaar may be said to be satisfactory. No artificial system of drainage exists; the excess of surface water is carried off during the rains by natural out-falls. There are no public and very few private latrines in the bazaar, nor any form of drainage for the privies or refuse water; consequently the inhabitants generally make use of the ravines and water-courses, which intersect and cut up the banks of the river adjacent to their dwellings, for the purposes of nature; while hundreds of them may be seen using the dry, sandy bed of the Sábarmati River. The refuse of all kinds from the bazaar is carted away daily to a spot set apart, about a mile distant, to the east of the camp, and is there buried in pits. The Sábarmati River is a perpetual stream meandering in its course sinuously from one bank to the other, leaving a considerable area of dry sand and gravelly shoal, which is used to a great extent, near the water-level, for cultivating potatoes and the various kinds of melons, cucumbers, and gourds. The soil in and around Ahmedabad Camp is a loose, light, alluvial sand, the silicious sand very largely preponderating; but as it gradually extends beyond the cantonment it merges into a compact loam and, still further distant, into a rich, black, alluvial deposit. It is all highly fertile from the mixture of organic *debris* and the alluvium deposited by the scour of the monsoon floods. It is a remarkably permeable soil, and it readily imbibes a very large percentage of the annual rain-fall; it is also very porous, and, consequently, very arid during the dry months. The surface is very flat, without marshes or swamp, and is slightly undulating here and there, and is well wooded with fine, old forest trees and innumerable mango and mhowah topes. The surface soil, taken at mid-day, three and a half months after last fall of rain, contains 0·48177 per cent. of moisture by weight, and at 2 feet below the surface 0·61199 per cent. Its volatil e organic matter, as is ascertained by incineration is considerable; in earth taken from the surface it contains 1·62760 per cent., and at 2 feet below the surface 1·13240. Its hygrometric properties, when carefully dried at about 230° Fah., are medium; it absorbs from the atmosphere, when exposed outside all night, 0·50730 per cent. of its own weight; and, when similarly dried and placed under a glass dome with a saucer of water, it absorbs 0·53385 per cent. of its own weight. The moisture of the surface soil may be partly caused by the deposit of dew; but at 2 feet below the surface it must be attributed more to capillary attraction and evaporation from the subterranean water-sheet drawn up to the surface by the sun's rays. The effect of this moisture on the climate is to cool it down and modify the cutting dry winds that sweep over the plains of Guzerat, in the colder months, from the eastward, and to lessen the effects of the parching hot winds, and the intense heat of the sun's rays during the months of April, May, and June. The water-supply of the cantonment is obtained chiefly from wells, of which there are nine for the sole use of the 9th Regiment N. I. These wells never run dry, and the supply is ample for all purposes; its quality is that of fairly good, hard, potable water. The wells are well built, and surrounded by substantial masonry.

The wells in all cantonments should, periodically, be well cleaned out, and the disturbed water quickly drawn off to dryness. This would ensure a minimum of organic contamination.

During the year I have made several very careful analyses of the drinking water from the various wells that are most largely used by the European and Native troops; and, to ensure the examinations being checked, I conducted the analysis of each in several different ways, and the result is correct. The following are analyses of three samples of water taken from different wells situate at a distance from each other, and which are the most largely used by the troops:—

Analysis of a Sample of Water from the Royal Artillery Well, No. 55, situate between Barracks Nos. 8 and 9, used by European Troops.

September 1874.

	Grains per Gallon.
Total solids dried at about 280° F.	38·50
Loss on ignition	0·50
Chlorine	2·10
Sulphuric acid	0·75
Lime	3·0
Magnesia...	2·75

	Grains per Gallon.
Hardness before boiling	17°
Hardness after boiling	2°50
Colour in a stratum of 2 feet	None.
Odour	None.
Taste	None.
Re-action...	Neutral.
Re-action when highly concentrated	Alkaline.
Ammonia...	A trace.
Nitrates	A trace.
Paramæcia	A few.
Rotifers	A few.
Vegetable *debris*	Traces.

No. 2.

Analysis of a Sample of Water from Well No. 116, *situate in front of the Quarter-guard of H. M.'s 9th Regiment N. I.*

	Grains per Gallon.
Total solids dried at about 280° F.	40·85
Loss on ignition	0·85
Chlorine	2·75
Sulphuric acid	1·0
Lime	3·25
Magnesia	2·10
Hardness before boiling	17°25
Hardness after boiling	2°50
Colour in a stratum of 2 feet	None.
Odour	None.
Taste	None.
Re-action...	Neutral.
Re-action when highly concentrated	Alkaline.
Ammonia	A trace.
Nitrates	A trace.
Paramæcia	A few.
Rotifers	A few.
Vegetable *debris*	Traces.

No. 3.

Analysis of a Sample of Water from the Temple Compound Well, in front of the Hospital of the 9th Regiment N. I., used both by the Troops and General Public.

	Grains per Gallon.
Total solids dried at about 280° F.	40·75
Loss on ignition	0·80
Chlorine	4·50
Sulphuric acid	1·0
Lime	6·25
Magnesia...	6·1
Hardness before boiling	27°0
Hardness after boiling	7°0

Colour in a stratum of 2 feet	None.
Odour	None.
Taste	None.
Re-action	None.
Re-action when highly concentrated	Alkaline.

Ammonia	A trace.
Nitrates	A trace.
Paramæcia	A few.
Rotifers	A few.
Vegetable *debris*	Traces.

It will be observed that the total solid constituents are high, and the loss by ignition is rather large, showing contamination by a pretty fair amount of volatile organic matter. This and the traces of vegetable *debris* may be accounted for by the wells being wide open to receive every form of impurity possible. Many of the sepoys and families make use of the river water from choice. I have done my utmost to dissuade the regiment from using the river water, but in vain.

Crops.

The country is a mass of rich cultivation in all directions, up to and even within the boundaries of the cantonment limits. The crops are chiefly cereals and oil-seeds. Vegetables of all kinds, including potatoes, are plentiful from November to March; but during the hot season they are very scarce or unobtainable, and are so expensive as to be quite beyond the means of the native soldier. And I have no doubt whatever that the want of fresh vegetables, and the insufficiency of other food combined, during the remaining months of the year contribute very largely to produce that inanition of system, impoverishment of blood, and scorbutic cachexia, which are so plainly perceived in all those low and anœmic forms of disease—unhealthy, incorrigible ulcers, and general debility—which so largely fill up our hospital returns every year.

I remarked in a former report that it would be well to introduce and encourage the rearing of vegetables at all stations, by the sepoys, on small allotments of land, conveniently situate near the lines, in the form of soldiers' kitchen gardens. The men by this means would have healthy out-door recreation, and the more important prophylactic usefulness of a fresh vegetable diet, *ad libitum*, and at the minimum cost. Meat is abundant and of good quality.

Diet.

The diet of the native soldier varies with his caste. Cereals and ghee constitute the food of all classes; and they all eat meat and fish, except the Sikhs, Purdessees, Chattris, and Brahmins. Altogether the native sepoy lives too poorly, and his constitution and fitness for the duties of a soldier are thereby greatly diminished. In many instances he starves himself to hoard his pay; others are compelled by circumstances to support so many relatives and connections that they are obliged to stint themselves of the food they actually require.

Diet Table.

Description of Food eaten by the various Castes of the Regiment.

	Mahrattis, Deeccanis, and Madrassis.	Sikhs, Purdessees, Chattris and Brahmins.	Konkan Hindus and Purwarrees.	Jews and Mussulmans.	Native Christians.
Flour, wheaten	lb. ¾	lb. 1½	lb. ¾	lb. ½	lb. ½
Rice	,, ½	,, ¼	,, ½	,, ½	,, ½
Ghee	ozs. 2	ozs. 3	ozs. 2	ozs. 4	ozs. 4
Dhall	,, 4	,, 4	,, 4	,, 4	,, 4
Mutton, twice weekly	lb. ½	None.	lb. ½	lb. 1	lb. 1 daily.
Bajri flour	,, ¾	None.	,, ¾	None.	None
Vegetables	,, ¼	lb. ½	,, ¼	lb. ¼	lb. ¼
Fish	,, ½	None.	,, ½	,, ½	,, ½

Game is abundant all over the adjacent country, and not difficult to obtain, and fresh-water fish can be had all the year round.

The regimental lines are situated to the north-west of the cantonment; they face south-east, and are in close proximity to the bazaar. Their situation is favourable, were it not for some closely adjacent nallahs, which are too largely used as latrines by both the native troops and camp-followers. They are sufficiently commodious to contain a hundred men more than the full strength of the regiment; they are well ventilated and in a fair state of repair, and are kept cool by the shade of fine large trees. Each soldier's quarters are small, low, and dark, and in the rains damp and murky. I would strongly advocate a much more liberal grant of cubic space and a better description of dwelling for the native soldier than now exists. The cubic space allotted to each sepoy is about 884 feet 6 inches. No system of artificial drainage exists in the lines; the old and filthy habit of throwing all their refuse-water out on the open ground in the front of their huts exists. It is said there are no cess-pits within the lines, but I suspect there are many; at all events, there is a channel which conveys impure water from the interior of each hut through an opening in the wall to the street in front, where it is allowed to flow at large and saturate the spot. Both these practices are very objectionable. There can be little doubt that at night every one of these receptacles within the huts are used as urinals, if not also as latrines, by every member of the family, for the reason that the trench latrines are situate some distance from the lines; and cold, fear of the dark, and laziness combined, deter them from using the legitimate latrines: moreover, it would be impossible to believe that purdah women, girls, and children would ever visit the latrines at night. This custom is a pregnant cause of sickness in each dwelling throughout the lines. Every morning these channels are sluiced with water, and the liquid filth flows over the ground within a few yards of their door, to be dried up and dissipated by the sun's rays to the detriment of all around.

The guard-room is commodious and in good repair, and the cells are ample and fitting in all respects; they are airily situate on the highest bank of the Sábarmati River, exposed to the breeze in every direction. There is no gymnasium; a covered shed for this purpose would be a great advantage, and would afford the men a useful and healthy recreation.

Latrines.

In 1872 the Government of India ordered a system of trench latrines to be introduced at all stations, and the old standard pattern of permanent latrines to be closed. This has been carried out in the 9th Regiment strictly, except during the monsoon, when the trenches were totally unusable; therefore, during the rainy season, the permanent latrines had to be resorted to. Long trenches are dug by the sweepers, one foot deep, on a spot of ground set apart for the purpose, about 250 or 300 yards north-east of the lines. Matting screens are placed round the trenches for decency, and these trenches are gradually extended, until sufficient ground has been utilized, when they are ploughed up, and the ground is used for cultivation. This system may theoretically look well, but practically it is faulty. The soil here is too sandy, the men do not like it, the women hate it, they consider it an indelicate arrangement, and they avoid using the trenches as much as they can, privacy is impossible, the deodorization of the trenches in this sandy soil is incomplete, and the kunbis decline to cultivate the ground so used: so that, as far as Ahmedabad is concerned, every object for which the system was introduced is frustrated. My opinion is, that the arrangement is ill-adapted to the description of soil that exists here, and that the old system of permanent latrines, with the dry-earth arrangement—pending a still better one—is the most suitable for Ahmedabad. In a former report, three years ago, I suggested a double-celled latrine pan, well dammered—one for solid excreta and dry earth, the other front one for urine and ablution water. This pan could be made to slide within and below the seat in grooves or on small wheels, and each person should be instructed to throw a small shovel full of earth over his deposits before leaving the latrine. In any system of latrine that may be considered best, a good lamp or two should be placed therein, to encourage their being used at night as well as for other manifest reasons. The latrines for the use of the sick in hospital are permanently constructed of brick and lime, well roofed in, and sufficiently commodious; they are conducted on the dry-earth system, a dammered pan being used for the solid excreta, and a dish for the urine and ablution water—the contents of each receptacle being emptied immediately after use, on each occasion, into a cart-pan, well mixed with earth, which is conveyed, about one and a half mile away, to pits, where it is buried in deep trenches direct eastward of the cantonment. These latrines, when properly supervised, and occasionally sprinkled with a little of McDougall's powder, are never in the least degree offensive, and I consider this dry-earth system perfect for a hospital. There are no latrines for female patients in hospital. It would be well if one or two close stools were allowed to each regimental hospital for the use of the female patients.

The dry sweepings of both the regimental hospital and the sepoys' lines are collected into heaps every day, and are carted away to the eastward of camp, and are there burned or sold as manure to the agriculturists.

Climate.

The climate is one of great extremes, being situate in the 23rd degree of latitude. The caloric absorbed by the earth in the hot months, that also which is reflected from the soil during the day, with the copious radiation of all this absorbed heat, for many hours after sunset make the nights almost unendurable, very enervating, and restless, destroying all energy, and conduces to many of the severer forms of visceral and nervous diseases with which we are so accustomed. If it was not for the copious evaporation from the countless trees of large size, which give to Guzerat the delightfully park-like appearance that it possesses, the climate would be positively unbearable. The cold, dry, piercing northern blasts that sweep down from the frozen *plateau* of Central Asia and the snow-clad Himalayas during December, January, and February, while it braces up and strengthens the Europeans, and fits them to pass through the hot season without much risk, tries the native constitution most severely, congesting his lungs—his thin native clothes being quite unequal to the chilling cold of December and January.

From March until June the climate is very hot, and from November to March it is very cold, requiring the warmest clothing and frequently fires; in both seasons it is very dry. This year was characterised by an unusually hot summer and a remarkably heavy rain-fall. The hottest months were March, April, May, and June—the month of May being the hottest in the year, with an average maximum heat of 100° F. in the shade within the hospital building, and an average minimum of 81°. The average range of the thermometer during that month—the hottest—being 23°. On the 9th and 10th May the maximum heat registered was 105° F.

The heaviest rain-fall occurred in the month of July, in which it rained 20 inches 78 cents during 23 days. The heaviest fall at one time was on the 25th and 26th of that month, during which 9 inches and 70 cents fell. In August 10 inches and 90 cents fell in 14 days. The total rain-fall for the year was 38 inches 21 cents, being 14 inches and 41 cents more than fell last year. The greater portion of this rain-fall is carried to the rivers by natural out-falls, nallahs, ravines, and a natural descent.

Meteorological Observations noticing the Temperature and Humidity of the Air, the Fall of Rain, and the prevailing Wind, &c., &c., for the Year 1874.

Year and Month.	Locality at which the Observations were made.	Temperature of the Air.							Rain.		Wind.	Remarks.
		Highest in the Month.	Lowest in the Month.	Range in the Month.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Approximate Mean for the Month.	Number of Days it fell.	Amount collected.	General Direction.	
1874.	H. M.'s 9th Regiment Hospital, Ahmedabad.									Ins. cts.		14 inches and 41 cents. more rain fell than during last year.
January ...		82	50	32	74	56	18	65	...	...	E.S.E.	
February ...		90	53	37	79	60	19	69	...	...	N.E. & N.W.	
March ...		96	62	34	89	70	19	78	...	...	N.W.	
April ...		104	72	32	97	77	20	87	...	...	N.W.	
May ...		105	81	24	100	81	19	92	1	0 60	N.W.	
June ...		101	81	20	93	81	12	89	11	2 97	S.W.	
July ...		95	78	17	89	81	8	86	23	20 78	S.W.	
August ...		89	75	14	86	79	7	82	14	10 90	N.W.	
September ...		95	75	20	89	80	9	84	6	2 96	S.W.	
October ...		94	70	24	91	72	19	81	...	...	N.N.W.	
November ...		89	60	29	85	65	20	75	...	...	N.N.E.	
December ...		84	59	25	80	62	18	71	...	...	S.E. & W.	
Mean ...		94	68	26	88	72	16	80	55	38 21		

Clothing.

The clothing of the Native Army is faulty. At present it consists of a close-fitting, tight tunic of thick scarlet cloth buttoned and hooked tightly at the waist and over the chest; it is scarcely a sufficient protection

from the cold, and is much too warm during the hot weather and rains, yet it is worn at all times on duty, day and night, and in the cold and hot seasons alike. Its tightness cramps the marching powers of the men, and it is very hot and uncomfortable during an active parade; consequently, the moment the men are dismissed from drill, &c., they run to their lines, throw off the unbearable garment, and expose themselves to a chilling breeze, or pour a chattie of cold water over their persons while sitting on a cold stone, with the result of a severe chill, producing either an attack of fever or congestion of the lungs or other viscera.

The dark-coloured, close-fitting cloth trousers are not suitable to the sepoy, whose loose-flowing native clothing is so different in style and comfort. Wide Turkish or Zouave trousers with gaiters (serge or cloth according to season) would be more suitable, and with loose red serge patrol jacket or Norfolk coat would look very well and be more appropriate. The dark-blue Kilmarnock cap without rim or peak is not a sufficient protection from the sun during the hot weather. The Commanding Officer of the 9th Regiment has introduced a neat red turban, which is wound round the cap so as to protect the temples. The boots are of the English ammunition pattern, made of common country leather by native workmen; consequently the material and workmanship are of the most inferior description. They fit badly, get out of shape easily, and wear one-third of the time that English boots do. I think it would be a consideration that the men would appreciate if the Government would issue English-made boots at cost-price to the Native Army, or have a branch of the Clothing Department for the manufacture of boots from English leather and materials by well-trained native artizans. The men should be ordered at a parade for the purpose, every week, to grease their boots with common castor-oil, which is very cheap in every bazaar, and has an exceptionally favourable property in softening and preserving leather. As regards their bedding, a water-proof sheet for the use of each sepoy might always be kept in the Quarter Master's store, not for common use daily, but for issue to the men when in tents, or on the line of march, or in the field, or in a cholera camp, or outlying duty of any descriptions these could be returned into store immediately on returning to camp. I have recently seen the men suffer from the want of water-proof sheets while on field service.

System of Pensioning.

Whatever good features the Pension Rules of 1837 and 1864 may have had then, the present system of pensioning does not appear to be suited to the constitution of the Native Army of the present day, nor to the proclivity of the native soldier, whose pervading spirit has but one object, viz., to get all he can out of the Government service—regardless of the principle involved, or of the means employed—in the least possible time. It is, therefore, not to be wondered at when every year a number of men, who have hitherto done their duty fairly well, appear at the hospital as the most helpless cripples imaginable. Men, who may have been seen a short time previously in robust health, are now halt, helpless, or blind; at once these men reveal themselves as malingerers; they cannot sham properly, and over-do their attempted deception; their essays to feign are often most ludicrous. On questioning them as to their length of service, the answer is almost invariably—15 years, the earliest period to which they are entitled to a pension for life from Government. These men, having enlisted about the age of 19 (which is the average age), are, at 15 years' service, still young, in the prime of life, drilled and disciplined soldiers, who may live for the next 30 years, and who have already cost the State a considerable amount of money. If, however, they can only pass the Annual Invaliding Committee, they then receive a pension of 4 rupees a month for life, being about 50 per cent. of their full pay, without all the irksome duty o musketry, running drill, parades, and guards. This system of pensioning has a most demoralizing tendency to natives; the amount of pension they receive is an income sufficient for all their wants, and they, consequently, think it worth their while to run the risk and try their luck to pass the Board. It would, I think, be much better, and greatly to the advantage of the State, the sepoy, and the service generally, if every man could *claim* his pension, regardless of the state of his health, after a fixed period—say 15 years at the earliest, and give him a small sum just sufficient for his few simple wants, but not enough to make it an inducement for him to leave the service, and increase the pension by quinquennial increments; and at 35 years compulsory retirement, except under special circumstances, ought to be enforced. This would check malingering; induce dissatisfied, discontented, and useless men, who have no heart for soldiering, to quit the army; and would very greatly enhance the morale the efficiency, and the fighting strength of every regiment by retaining voluntarily all the men who took an interest in their profession and the service, who are in fact soldiers. This would do away with the necessity of invaliding boards entirely. The power to discharge a man on grounds of sickness or other disability by a medical board at any period of his service should be retained, and Commanding Officers in consultation with the Medical Officer should be enabled to discharge these men summarily, on good medical grounds, with the same gratuities as at present exist.

Hospital.

The hospital is well built, tile-roofed, ample, and commodious for all requirements. The general building, is divided into two wards: one is two-thirds of the length of the entire building. At each end of the building under the same roof are two rooms, north and south. The northern room is the dispensary, &c., and is no larger than is necessary for that purpose; the southern room is devoted to female cases when occasion demands, and occasionally, for the want of a separate special ward, it is used for contagious diseases. The hospital is well ventilated by roomy shafts in the roof. These unfortunately leak very badly during the rains, especially when the high winds beat the rain through them; the floor then becomes soaked, and the interior of the hospital becomes damp and cheerless, and does not dry for many days. This defect of the ventilators should be remedied. The roof also always leaks badly at the commencement of the rains from defective or broken tiles.

The average daily number of patients in hospital, not including females or children, has been 15·5 during the year, allowing to each a space of about 4,000 cubic feet. The subsidiary buildings are all that could be desired, but a female ward and a separate ward for contagious diseases would be of great advantage to the regiment, and there is a want of a dead-house which would serve for the use of both the native regiments stationed here. A wall round the hospital compound would be a great improvement in the place of the unsightly, straggling cactus hedge.

The dry-earth conservancy is carried out everywhere in the hospital compound both for the patients and the servants; the earth is never re-used, but is carted away daily, and the system is altogether very satisfactory.

The health of the regiment may be said to have been good during the year. Sickness has been much less this year than in any of the five preceding years. Last year 92 per cent. to strength were treated, but this year the percentage of treated to strength is only 63·26. The climate of Ahmedabad would accordingly appear to agree with the health of the men of the 9th very satisfactorily, better even than Poona, their last station.

Strength of the regiment excluding European Officers		637
,,	European officers	7
,,	Hindus	556
,,	Mussulmans	71
,,	Christians	10
,,	Married men	490
,,	Children	450
,,	Unmarried men	147
,,	Recruits	48

The duties of the regiment have been very light, and of a nature calculated to improve its health. Each private soldier has had $5\frac{3}{4}$ nights in bed in the week throughout the year. The parades are light and easy, and not of over-lengthy duration; the guards and picquets are not at all onerous or burdensome, and their line duty is very little. I have always found that during active work, musketry drill, light infantry drill, &c. &c., the men are in much better health and spirits than when they are idle and inactive; and I am of opinion that more route-marching, or some active employment on public works, such as building, road-making, improving the camp, erecting butts, digging and making entrenchments, &c. &c., would be highly conducive to health and of great advantage to the State. At present the sepoy has not sufficient work of the proper description to keep him in the active health so necessary to a soldier, nor to test his strength or fitness for service in the field if required at a moment's notice.

The total number of cases treated in hospital during the year has been 403 from a total average strength of 637. Of the 403 treated, 15 remained in hospital under treatment on the 1st January, and 377 were discharged to duty. Eight were sent on sick certificate to their country. One patient was invalided on pension, and two died—one from pneumonia and the other from pleurisy. The death from pneumonia occurred in a weak, sickly, scorbutic man, and the one from pleurisy in an old, worn-out sepoy, 54 years of age.

Eleven men, not hospital cases, were invalided on pension during the year.

Ague.

One hundred and ninety cases were admitted during the year, being 47·9 per cent. of the whole of the admissions into hospital from all causes. The greater number of these cases have been of the ordinary type, and readily amenable to treatment; a few cases, however, have been most obstinate and persistent, chiefly in ill-fed, impoverished men of low stamina and with a distinct scorbutic cachexia. Quinine and cinchonidine have both failed in my hands in being of the least use in these cases. Iron and good food seem to produce the best effects, and the

protosulphate of iron is the best and cheapest form of that medicine that I have employed. Four grains three times a day for a week or more, with good food, frequently produces a wonderful change in these cases, especially if combined with a liberal vegetable diet and a little lime-juice at regular intervals. In ordinary cases of ague I seldom or never administer quinine, but trust to an eliminative plan of treatment, with satisfactory results. In really obstinate cases I have found quite as good, if not better, results from cinchonidine than quinine, and I am convinced that cinchonidine is a better general tonic, and does not produce the "tinnitus aurium" that is caused by large doses of quinine; and from the observations that I have made I think it a superior antiperiodic to quinine.

Conjunctivits.

Thirty-two cases of conjunctivitis amongst the fighting men of the regiment and amongst the women and children, it became quite an epidemic. Immediately on the outbreak of the disease I had a parade of the whole regiment for inspection, and isolated all cases that had the least symptoms of the disease. I afterwards had bi-weekly inspections of all the women and children until the disease disappeared; these inspections were of great use, combined with a good general clean up of the interior of every hut, in stamping out the disease. Some of the cases were obstinate and difficult to cure, but these were characterised by a scorbutic taint, and the effects of deficient food. A generous diet, with lime-juice, &c., aided materially in the recovery of these cases.

Contusions.

Thirty cases of contusions were admitted, 25 of which were shoe-sores, and these latter were generally the most troublesome cases of all in hospital, many of them actually remaining several weeks or even months in hospital under treatment before becoming fit for duty. The cause of these injuries is a remediable one,—ill-fitting shoes coupled with carelessness and laziness on the part of the sepoy, who cannot be taught to wipe the sand carefully off his feet before putting on his shoes, and his neglect to keep his shoes soft by a little grease or oil. The worst cases occurred in weak, anœmic, bloodless men, who fed themselves badly, and had a distinct taint of scurvy. In these cases the primary trivial excoriation rapidly degenerated into a most unhealthy-looking sore, which gradually but steadily extended into a large sloughing ulcer, with everted thickened edges and a pale, ash-coloured, weak surface which no stimulation, not even sulphate of zinc, nor cantharides, could rouse into healthy action. Nothing short of skin-grafting "heteroplastic transplantations" seemed to have any marked favourable effect; this with tonics appeared to be the quickest remedy I could discover.

Boils.

Some are very intractable, even after opening freely from a large slough or core of dead areolar tissue with a deep expanded base which tenaciously holds on and will not come away. Poulticing does no good, but often harm by producing other smaller ones all around by the moist sour medium employed. A few drops of glycerine with a sixth part of ol. terebinth. or tr. opii and a sixteenth of acid carbolic, according to the sluggish or inflamed state present, is the best remedy I have employed, and this is applied on pieces of common calico. No attempt to arrest or discuss them is ever successful; therefore it need not be tried. The state of the system which produces them must be attended to, and iron freely administered.

Bronchitis.

Is a common disease in the Native Army, and seems to have largely increased of late years. These cases generally recover; the native constitution cannot stand much lowering.

Dysentery

Thirteen cases of this disease were treated during the year; all were severe cases; none died. These cases are, no doubt, of malarious origin, started into activity by exposure to damp or cold or unwholesome food. The great diurnal range of temperature (sometimes 40° between the lowest at night and the highest during the day, in the shade) assists largely in its commencement. In all these cases the liver and spleen were found to be congested.

Small pox.

One rather mild case of small-pox occurred during the year, and the patient recovered satisfactorily. Nothing could be ascertained as to the origin of this solitary case; he was at once isolated, his hut purified, and his tainted clothing destroyed.

Syphilis.

Only one case of primary syphilis was treated during the year. The regiment has been peculiarly exempt from venereal, and there have only been two cases of gonorrhœa. None of the remaining cases that were admitted into hospital presented features of unusual or sufficient interest or importance to deserve a special report.

Altogether the general health of the regiment has been very good; that is, the admissions into hospital have been fewer than for four or five previous years, but there is a strong taint of scurvy in many men of the regiment, and the physique of the regiment is very much below the average on account of the undue proportion of prematurely-aged men, who are worn out, toothless, and emaciated, and unfit for the duties of a soldier. In a large proportion of the younger men the physique is inferior; they are thin, narrow-chested, weedy soldiers, badly recruited, and too readily passed by the station committees for examining recruits. The consequence is, they are always unfit for duty when their services are most required.

Vaccination. There have been 40 primary successful operations and 17 secondary or re-vaccinations during the year.

Service Table.

Under 6 years' service	144
From 6 to 10 years' service	158
„ 10 to 15 „	53
„ 15 to 20 „	198
„ 20 to 25 „	32
„ 25 to 30 „	24
„ 30 to 35 „	22
Under 40 years' service	6
Total ...	637

	1873.	1874.
Average yearly strength of fighting men	569	637
Remained in hospital last return	3	7
Admitted into hospital during the year	525	396
Discharged from hospital during the year	514	386
Died in hospital during the year	7	2
Transferred from the regiment	1	...
Invalided from the regiment	48	12
Remaining in hospital this day	7	15
Recruits joined during the past year	44	48
Average daily sick during the year	16·6	15·5
Proceeded on sick leave from the regiment	13	8
Proportion of sick to strength per cent.	92·81	63·26
„ of deaths to treated	1·32	0·49
„ of deaths to strength	1·23	0·31

Years	Admissions.	Remaining.	Total.
1868	565	39	604
1869	714	26	740
1870	613	18	631
1871	421	12	433
1872	650	3	653
1873	525	7	532
1874	396	15	411

Detailed Statement of Sickness of the above Corps according to Strength and their Countries.

	Average Strength.	Total treated in Hospital.	Total Deaths.
Hindustanis	133	93	...
Deccanis	82	49	...
Konkanis	341	226	1
Other countries ... Madrasis	61	28	1
Punjabis	17	6	...
Goanis	...	...	...
Guzerati	1	...	...
Sindi	1	1	...
Afghani	1	...	...

The following table shows the proportion per 1,000 of admissions from ague in each month to treated and to strength :—

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Admissions to treated .	115·4	305·5	250·0	384·6	475·8	266·6	594·6	425·0	620·0	661·7	697·7	304·3
Deaths...	...	...	...	...	...	...	...	...	...	...	...	...
Admissions to strength.	4·5	17·6	10·9	8·9	13·4	6·8	35·5	26·3	46·4	68·6	43·6	10·5
Deaths...	...	...	...	...	...	...	...	...	...	...	...	...

H. M.'s 28th Regiment N. I.

Ra'jkot.—In medical charge of Surgeon A. J. Leggatt; Strength, 475.

Location and Movements of Corps.

This regiment left Poona after the camp of exercise at Chinchwad on January the 8th, and marched to Bombay *viâ* Panwel. It was then embarked, after a few days' stay in Bombay, on board the B. I. S. N. Company's steamer "Asia" and proceeded to Porbandar. On board the "Asia" there was ample room, the arrangements for ventilation and conservancy being very good. From Porbandar it marched *viâ* Ranahwow, Wasgalia Johdpur, Wadala, Kareira, and Chibra, to Rájkot, which was reached on February the 10th, and since then has remained stationary.

Detachments.

Of these this regiment has supplied two—one to Dwárka, consisting of—

European officer	...	...	...	... 1
Native officers	...	...	...	... 2
Rank and file	...	...	...	... 85

and another to Barda Chowki, consisting of—

Native officers	...	...	...	... 2
Rank and file	...	...	...	... 38

The former detachment has remained stationary since its arrival at its destination, and has enjoyed good health. The latter has, however, been removed to Porebunder, leaving only a havildar's party to take care of the lines and buildings. This change was effected on account of the unhealthy character the place bears, and not without cause, as, during the short time that the party remained, there were a large number of admissions into hospital and two deaths. It is high time, I consider, that this detachment should be discontinued, as the men that return from there are always in a most debilitated and anœmic state.

Topography & Physical Geography.

The station of Rájkot is situated due west, and about half a mile distant from the town of that name. It is situated on ground which slopes down on two sides to the River Agu, which runs in a north-westerly direction. The ground on which the camp itself is situated, is nearly level, having a slight natural-drainage slope in the direction of the river. The soil within camp limits is for the greater part moorum, though in places there is a small superstratum of black soil. To the north of camp there is the River Agu, distant about half a mile; the ground between this and camp is a good deal broken up by small nallahs running down into the river. Beyond this the ground is moderately level for a short distance, throughout which there is a considerable depth of black cotton soil, and is then broken by some low hills of a trap formation. To the east there is the town and river, beyond which the ground is rough and stony, intersected by numerous nallahs, and soon becoming broken by low rocky hills which extend for a distance of some two miles along the Sirdar Road. To the south the country is level, or at most undulating, the soil is good, and the ground cultivated throughout nearly its whole extent. To the west the ground is again broken by small hills, though the soil is rich and well cultivated. The whole of the soil of the neighbourhood of Rájkot is of a trap formation, with a superstratum of black cotton soil.

Water.

The neighbourhood of Rájkot is not very abundant in water. To the north-east, with the exception of a small nallah about three miles from camp, which quickly dries, but little water will be found till the hills in the neighbourhood of Bamanbore are reached. Here there are the Beti nallah and the river at the above-named place, in both of which water is generally to be found. To the south-east no water will be met with nearer than Sirdar, where there is a tank (when I speak of no water of course wells are not included). To the south, water will not be met with nearer than Gondal, though in the beginning of the cold weather it may generally be found in a small nallah at Palri, about eight miles from camp, and in a small tank at Rhebra-twelve miles from camp. To the south-west a small river will be met with at Cuncote, seven miles from camp, and again at Chibra, fourteen miles distant. To the west, water may generally be found in a small tank among the hills about five miles from camp, and along the Dhrole Road, about four miles, and also at Purdri, about sixteen miles from camp.

The supply in camp is wholly dependent on wells, which yield a pretty abundant supply; it is also fairly good, though there is rather too great an amount of salts, especially lime. I have been unable to make any analysis of the water of various wells, owing to the want of chemical materials and appliances.

The drainage of Rájkot and the Sudder Bazaar, both of which are out of military limits, is bad indeed; that of the city may be said to be nil.

Effects on Climate.

The climate of Rájkot for seven months in the year, from November to May, is good; for the remaining five it is decidedly unhealthy, more especially during the months of August, September, and October.

The daily variations of temperature are often extreme, the thermometer standing at 38° in the morning, or even lower, and rising to 95° or 96° in the day-time during the cold weather; while during the hot season it rises from about 75° in the morning to 120° in the day-time or even higher. Appended is a return of the average temperature for each month during the year:—

Thermometer Observations recorded at Rájkot from 1*st January to* 31*st December* 1874.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Minimum	Not kept, the regiment being on the line of march.		69·19	77·18	78·12	80·34	83·25	73·50	75·27	68·17	64·50	58·40
Mean...			78·3	91 0	97·0	93·1	89·1	83·1	831	82·1	80·1	75·0
Maximum			90·27	99·51	99·51	94·40	89·40	86·30	89·37	86·39	90·5	83·38

The direction of the wind varies greatly at different seasons of the year. In the cold weather the prevailing wind is either east or north, changing about chiefly between these cardinal points. During the hot season and rains the direction is S.S.W. or W., but it as often as not shifts to some other point of the compass. During the rainy season the weather is always hot and muggy. The rain-fall is uncertain, and at times three weeks or a month pass without any whatever. The average fall is about 23 inches.

Lines.

The regimental lines are comparatively new, having been built by H. M.'s 18th Regiment N. I., which left the station on the arrival of this regiment. They are well built, though all the blocks are not on the same principle—some of them having the verandahs only partially enclosed, whilst others have them built in completely. The lines consist of eight rows of huts; in each row are four blocks and two native officers' houses, and each block twenty-two houses. The non-commissioned officers' houses are considerably larger than those of the sepoys. They are in very good condition at present; all are somewhat raised from the ground, but the height of the plinth varies from 6 to 18 inches according to the slope of the ground. Suffice it to say that the space is sufficient.

With regard to ventilation, there is none besides what is afforded by the door; and as this is invariably kept closed at night, it must be of a very limited character.

There is no regimental bazaar kept up. There are no villages in the neighbourhood of the lines, the nearest being three miles distant. There are, however, the lines of the Gaekwar's Contingent within a short distance, and the town itself is not more than three-quarters of a mile from the lines.

Drainage is only the natural surface-drainage down to the river, but as there is a gentle slope in that direction it is fairly complete.

Conservancy and Sanitary Arrangements.

The permanent latrines have been for some time past closed, and trench latrines substituted. This system succeeds very well in the dry season, but during the rainy season it is not only disagreeable to use, but decidedly unhealthy. At first the men objected strongly to using these latrines, but after the erection of screens partitioning the trench off into separate compartments they have become more reconciled to the use of them.

The conservancy in camp is decidedly bad, there being only one filth-cart to carry out the work of the whole of camp, while at least two are required; consequently the latrines are not visited, and the filth receptacles emptied nearly so frequently as they should be.

Water-supply.

The water-supply of this camp is, to the best of my knowledge, good. Nearly all the wells are used for supplying drinking water, and as there has been no sickness which could have been caused by the water, I conclude that the same is wholesome and good.

Food.

Food of all sorts in Rájkot, though fairly good and abundant, is extremely dear.

Clothing. There has been no alteration in the clothing of the men.

Duties and their Effect on Health. The duties of the men have been light. They have only consisted of, besides the march previously alluded to, guards, parades, and a few escort duties, which have had no prejudicial effect on the men's health.

In stating this I am not speaking of the detachments at Dwárka and Barda Chowki or Porbandar, as I have great reason to believe that the health of the men who were stationed in the Barda hills has been much impaired by their residence there.

Exercise, Amusement, and Occupation. The amusements and occupations of a sepoy when off guard generally consist of eating, sleeping, or wandering about in the bazaar.

Lock-up Rooms and Cells. There are no cells belonging to these regimental lines. The lock-up room in the quarter-guard is roomy and well ventilated, its superficial area being 240 square feet and its cubic capacity 3,320 cubic feet.

Marches. The only march the regiment has undertaken this year has been from Poona to Bombay *viâ* Panwel, and from Porbandar to this place, both of which have been noticed previously.

Hospital and its Surroundings. The hospital is situated about 400 yards from the lines, between them and the officers' bungalows. It is a large building, the ward for the accommodation of patients being 100 feet in length by 22 in breadth and 13 in height to the eaves. There is no ventilation besides that of the doors and windows; but as they can generally be all kept open, and there has been no over-crowding, this has not been felt to be any very great inconvenience. The acommodation for the hospital establishment is very bad, indeed. There are only houses for two medical subordinates, whereas they are entitled to four, and those for the 2nd class establishment are utterly unfit for habitation.

Accommodation and Defects.

There is no dead-house.

During the past year a bathing room has been built; but as the necessary articles for completing of the same have not been received from the Barrack Department, it is at present useless. I should recommend that new quarters be built for the medical subordinates, and their present quarters handed over to the orderly and 2nd class servants.

Conservancy. The latrines are old, but are kept clean, and by the aid of McDougall's powder and carbolic acid are pretty free from smell. There is, however, great difficulty at times in getting the filth receptacles properly cleansed, owing to some break-down in the conservancy cart; and as there is only one, all work of cleaning latrines has to be suspended until it has been repaired.

Hospital Water-supply. The water-supply for the hospital is obtained from a well in the regimental lines; the water is good and plentiful.

Sickness, Mortality, and Invaliding. The sickness in the regiment has shown a considerable increase during the past year, being 623 in 1874 as against 532 in 1873. This is due to the increase of ague, which numbered 337 in 1874 as against 230 in 1873. Among general diseases there has been an increase in ague and chronic rheumatism and primary syphilis, but of secondary affections there has been a slight decrease. In diseases of the eye there has been a marked increase, the number of admissions being 19 as against 10 in 1873. There has also been a slight increase in the number of admissions for affections of the respiratory organs. One case of phthisis proved fatal. There has been a decrease in the number of admissions for dysentery and all varieties of the diseases of the digestive system. The cases of dysentery were, for the most part, slight; one only proved fatal. There was only one admission for hepatitis, a slight case which was soon discharged, cured. Considering the large number of cases of ague, it is a wonder that there have not been a larger number of cases of enlargement of the spleen; as it is, only 3 cases were admitted during the year, of which 2 were discharged cured and 1 sent on medical certificate to his country. The cases of contusion were rather numerous, but by far the larger number of these were shoe-bites occurring on the line of march.

The list of surgical operations is not large, consisting of an amputation of the leg at the middle third for gangrene of the foot; after the operation the flaps suppurated, the bone protruded considerably, dysentery came on, and the man became reduced to a skeleton. He, however, struggled on in this state for more than a month, and at last sank. The calculus removed was a very small one—10 grains only, which had become impacted at the neck of the bladder.

Twenty-three men were sent up before the Invaliding Committee, of which 11 have been returned to duty, though utterly incapable of performing it in anything like a satisfactory way, and being utterly useless to send on escort or any active duty.

Principal Causes of Sickness.

Do. of Mortality.

Mortality according to Race.

The principal cause of sickness has been the climate, which, during and after the rainy season, is most trying. That of the mortality has been simply the ordinary diseases. All three who died were Hindus—one a native of Hindustan, and two of the Konkan.

Epidemics.

There were only a few cases of small-pox, 6 in number, which occurred in February last; they were all slight, and recovered rapidly. With this exception there have been no cases of epidemic disease during the year.

Vaccination.

Re-vaccination.

During the year vaccination has been regularly practised among the children. Re-vaccination has not been carried on this year, as the whole of the men in the regiment who were not protected by small-pox had been re-vaccinated the preceding year.

All the recruits not protected by small-pox had been recently vaccinated. The total number of children vaccinated during the past twelve months was 60, of which all were successful. There are 8 children at present unvaccinated in the lines, all of whom are too young for the performance of the operation.

General Health and Physique of the Men.

The general health of the regiment has been fairly good during the past year. Their physique is good. Most of the recruits, of whom 23 were enlisted during the year, were well-built, strong, and active young men; some two or three, however, sent up to the regiment were of small chest measurement and rather delicate, but since the setting in of the cold weather they have shown a marked improvement.

Treatment of Disease when special.

In the matter of special treatment of diseases the sulphate of cinchonidine has been tried in cases of ague. Though decidedly inferior to the sulphate of quinine, it is still very effective in slight cases of fever, of which the large majority of the admissions into a regimental hospital is composed. I am of opinion that it might to a great extent supersede the administration of quinine. It is not possible, however, to entirely do away with the issue of quinine, as in severe cases the exhibition of this drug is absolutely necessary.

Special Observations.

With regard to any special observations, the only one I would wish to bring prominently forward is with regard to the latrines and conservancy. It is most important, I am of opinion, that the permanent latrines should be opened during the rainy season, as the using the open-trench latrines and the smell which proceeds from the same during that season of the year is most prejudicial to the health of the men. It is also absolutely necessary that a second cart for the conservancy should be allowed; otherwise it is impossible that the work can be efficiently carried out.

Resumé of the whole.

In the *resumé* of this I should briefly state that the men of this regiment have been in fair health during the year; they are well housed, and have plenty of good water. Provisions have been dear but plentiful. The work has been light. Three men have died in hospital, 11 have been invalided, 6 have been sent on medical certificate, and 23 recruits have been entertained.

The accommodation for the men in hospital is good, but that for the hospital establishment decidedly bad.

Instruction of Medical Pupils.

Clinical instruction is daily given, and other instructions on two or three days in the week.

No. 1 Company Native Artillery.

RA'JKOT.—In medical charge of Surgeon BATTY; Strength, 133.

1. No. 1 Company, Native Artillery, has been stationed at Rájkot during the last ten months of 1874; the company arrived here from Aden on the 28th February 1874.

2. The lines are composed of wretched, tumble-down huts, and new lines are in course of construction.

3. The conservancy adopted by the Native Artillery here is the same as that by the 7th Regiment N. I.

4. Four of the Government wells contain excellent water, and last during the whole year, but the others run dry from time to time. There are two public wells close to the artillery lines, and the water from these is fair; they are surrounded by good, substantial, high walls, which prevent the slightest possibility of contamination from the outer surface. There are no drains of any kind close by.

5. There is a large well close to the artillery regimental hospital, which is only a few yards from the hospital latrine: the situation of this latrine ought to be changed, as there is danger of contamination of the water from it. The water, as a rule, from this well is excellent, but last hot weather it had to be closed on account of a number of cases of diarrhœa appearing after drinking the water from this well.

6. The duties of the battery have been—working parties, morning and evening, for building lines, guard duty, and parades; the drivers exercising the mules and stables. The work has not been in any way prejudicial to the men's health.

7. Building lines, parade, and guard duty are the chief exercises taken by the sepoys of this company.

8. There are no lock-up rooms or cells in the artillery lines. There is a station one under the staff officers.

9. The company arrived here from Aden on the 28th February 1874, which is the only march made by it during the year.

10. The average strength of No. 1 Company, Native Artillery, during 1874 has been 133. The number of admissions into hospital has been 158, and the total treated 158.

Average daily sick	3·45
Treated to strength	118·79
Deaths to strength	None.
Deaths to treated...	None.

Ague gave almost half the number of cases treated. The disease in the majority of cases was simple and uncomplicated. The months of August, September, and October gave the largest number of admissions. The type of fever was, as a rule, of the quotidian form. From the 21st November last the sulphate of cinchonidine was tried in all cases of intermittent fever in doses varying from 5 to 8 grains four times a day; the result, in the majority of these, was favourable, but all the cases were of the mildest form. There was not a single case of remittent fever admitted or treated.

Dysentery gave two admissions; in both cases there was very considerable congestion of the liver.

Acute hepatitis gave one admission.

Contusions, chiefly shoe-bites and bruises from kicks from the mules, gave a large proportion of the admissions, namely 21.

There was not a single case admitted or treated during the period under review that presented any important features worthy of special remark.

Twelve men were invalided during the past year, chiefly on account of old age and debility produced by long service.

11. Those circumstances which predispose to intermittent fever were the principal causes of sickness, namely—in the rains—wet, damp, cold and malaria; in the cold weather—violent changes of temperature.

12. No deaths took place in the company during the year under report.

13. Thirteen primary vaccinations and 81 re-vaccinations took place.

14. The general health of the corps has been fair; the physique of the men is good.

2nd and 3rd Squadrons, 2nd Regiment N. L. Cavalry.

RA'JKOT.—In medical charge of Surgeon BATTY; Strength, 136.

1. The 3rd Squadron, 2nd Regiment N. L. C., was stationed at Rájkot from the 1st January to 27th November of this year. The 2nd Squadron arrived from Deesa on the 24th November last, and has been stationed at Rájkot from that date. On the 27th of the same month the 3rd Squadron returned to Deesa.

2. A detachment of 22 men has been stationed at Drapa in Kattywar.

3. The lines have been built to accommodate 150 men; they are larger than the standard plan. The available space occupied by the lines may be said to be about 67,240 square yards. They are built on 6-inch plinths, and are composed of two sets of buildings, the old and new huts; the new huts were built in 1872, and consist of two rows, running parallel (east and west), with 26 huts in one row and 28 in the other. At the west end of each row there is an officer's house.

The old buildings are *pucka*-built (stone and mortar); they consist of the granary, which is equivalent to 30 of the new huts; two barracks, each containing 3 rooms; two houses for native officers, and one for the pay duffedar. These various old buildings run at right angles to the new rows.

The cubic capacity of each new hut, 1,000 cubic feet.

The cubic capacity of each new officer's hut, 1,412 cubic feet.

The cubic capacity of each old building, 2,634 cubic feet.

The huts are kept in good repair, and the buildings are well suited to the wants of the men.

The ventilation is carried on by means of door-ways and apertures in the walls.

The station conservancy cart removes, daily, all sewage from the lines to a long distance from camp, where it is buried in pits.

The bazaar of the 7th Regiment N. I. is quite close, and divides the two lines. There are no neighbouring villages within two miles, except the town of Rájkot, which is distant about ¾ mile. The drainage is surface. There are no tanks. The level of water (sub-soil water) is about 15 feet in wells in the vicinity.

4. The conservancy adopted by the 2nd Squadron, 2nd Regiment L. C., here is the same as that by the 7th Regiment N. I.

5. The water-supply is obtained from wells; there are 11 Government and 9 private wells in the station. Four of the Government wells contain excellent water, and last during the whole year, but the others run dry from time to time. There is a large river close to the lines, which is used by the men for bathing and washing purposes; the water from this source is not good, as all the drains from the large native town, built on its western bank, open into it.

6. The duties are in no way excessive; they consist of exercise, mounted exercise, watering and stable parades, sword and carbine exercise, and guard duty. They have had no ill effects on the health of the men.

7. Except regimental duty I do not know of any additional exercise, amusement, or occupation.

8. There is one lock-up room close to the quarter-guard, which has a cubic capacity of 720 cubic feet, with a superficial area of 64 square feet.

9. The 3rd Squadron, 2nd Regiment L. C., marched from Rájkot to Deesa on the 27th November 1874, in relief of the 2nd Squadron, which arrived at Rájkot from Deesa on the 24th November 1874; a detachment of the 3rd Squadron marched from Drapa to Rájkot to proceed with the 3rd Squadron to head-quarters, Deesa, and was relieved by a similar detachment from the 2nd Squadron.

10. There is no dead-house in the station, and the absence of a building of this kind is much felt.

11. The hospital water-supply is obtained from a large well, some ten yards from the hospital.

12. The average strength of the 2nd and 3rd Squadrons, 2nd Regiment L. C., during 1874, has been 136. The number of admissions into hospital has been 116, and the total treated 120.

Average daily sick	3·58
Treated to strength	88·23
Deaths to strength	None.
Deaths to treated	None.

Ague gave almost half the number of cases treated. The disease in the majority of cases was simple and uncomplicated. The months of August, September, and October gave the largest number of admissions.

The type of the fever was, as a rule, of the quotidian form. From the 15th November last the sulphate of cinchonidine was tried in all cases of intermittent fever in doses varying from 5 to 8 grains, four times a day; the result in the majority of these was favourable, but all the cases were of the mildest form.

There was not a single case of remittent fever admitted or treated.

Dysentery gave 4 admissions; in all there was very considerable congestion of the liver.

The disease after three or four days' administration of ipecacuanha in 30-grain doses, twice each day, yielded to this treatment. Hepatitis gave one admission (a jamedar, who is also the subject of aneurism of the innominate artery); the disease was confined to the capsule of the organ, and under prompt and active treatment was soon arrested.

Leprosy gave one admission. The subject, a Purdessee Brahmin, aged 28 years, denies any knowledge of the disease ever having been present in any branch of his family. The disease is mild, and of the anæsthetic form: over the feet and hands there are some largish white cicatrices; over the last joint of the fingers of both hands there were ulcers on admission, and one or two tubercles close to the elbow-joint. I have administered, both locally and internally, the gurjon oil (balsam dipterocarpi), commencing with 5-minim doses combined with the same quantity of castor oil; the gurjon oil was increased each day up to 15-minim doses. Locally he had rubbed in after a bath the following:—Gurjon oil, one part; lime water, three parts, twice each day, with the most favourable results. The man is still under treatment and daily improves.

13. Those circumstances which predispose to intermittent fever, were the principal causes of sickness, namely—in the rains—wet, damp, cold and malaria; in the cold weather—violent changes of temperature. September, October, and November gave the largest number of admissions, which were 18 each month.

14. No deaths took place in the squadron during the time under review.

15. The rain-fall, which was 27 inches and 20 cents last year, has a great influence in assisting in the production of the cause of the prevailing disease here, namely, ague.

16. There were no epidemics.

17. Thirty-eight primary vaccinations took place during the year.

18. The general health of the squadron has been fair; the physique of the men is good.

19. There were no diseases calling for any special treatment.

Head-quarters Wing, H. M.'s 7th Regiment N. I.

Ra'jkot.—In medical charge of Surgeon R. H. Batty; Strength, 324.

1. The head-quarter wing of H. M.'s 7th Regiment N.I. has been stationed at Rájkot during the past year. No movements have taken place, except the return of two companies from Dwárka and Burda Chowki.

2. A wing of the regiment has been stationed at Tanna during the whole of 1874. A company was at Dwárka from the 1st of January to the 3rd of March, and a company at Barda Chowki from the 1st of January to the 10th February 1874.

3. Rájkot (lat. 22° 18′, long. 70° 50′), the sudder station of the Political Agency in Kattywar, and the head-quarters of the British camp, is situated on the left (west) bank of the Adgi, and distant, in a south-west direction, 65 miles from Wadwan (railway terminus) and 125 from Ahmedabad. A causeway with sluice-gates was constructed across the bed of the Adgi, about two years ago, which connects the town with the road from Wadwan, and also serves as a "bund" whereby the water of the river may at any time be stored close to the town.

The town itself is a small one, and not worthy of special remark. It is surrounded by an embattled wall (*kôt*) of which the eastern side rises straight from the river-bank, and is surmounted by the conspicuous residence of the Thakore Sahib, a Jadeja Rajput. North of the native town, and above the left bank of the river, stands the civil hospital. Farther north is the suburb called Keatingpore, where the lines of the Gaekwar's Contingent are situated. In this direction are also placed the gaol (at extreme north), the Political Agent's bungalow, and the residences of most of the civil and political officers. The camp, with a church in its centre, is situated apart from the civil buildings and west of the native town, the lines of the 28th being on the extreme north-west; while the 7th, the cavalry, and artillery lines occupy a central position, east of the camp, extending towards the town.

The country about Rájkot is treeless, flat, and uninteresting, though good crops are grown of cotton, wheat, bajri, jowari, sugar-cane, &c., &c. The soil consists of trap, which when found on the surface is generally in a decomposed state (moorum). Over the trap in many places there has been deposited an alluvial bed of black clay. Sometimes between the clay and the trap there is found a white soil which is used by the poorer people for plastering their houses. In the neighbourhood of Rájkot are also found deposits of white limestone, which, though rather soft, is useful for building purposes; of this material the college as well as most other buildings has been constructed. The water is generally good, but it contains much lime in solution; it is chiefly obtained from wells for drinking purposes, and from the river for washing.

The climate is pleasant and healthy, except during the months of September, October, and November, when fever is very prevalent.

The air is remarkably dry, notwithstanding that the west wind blows from the sea through the greater part of the year. This sea-breeze keeps the mornings, evenings, and nights comparatively cool throughout the hot weather. Over the north and north-eastern portions of Kattywar the soil is in many parts unfertile; moorum and sandstone abound. On the east coast the country is more fertile, but in many parts sandy and brackish. The south and west portions are exceedingly fertile, and extensive patches of irrigation are frequently met with.

The whole province abounds in running streams; many of them, particularly towards the south and west, continue all the year round. Tanks are only to be found far north, and along the east coast, where the villages are chiefly dependent upon them for their water-supply.

The water of the southern and western parts of the province is plentiful, and considered good and wholesome. Over this portion of the province the geological formation is principally limestone and trap. In the north and east the formation is chiefly sandstone.

4. I am not aware of any special effects that the soil, water, and drainage has on the climate of Rájkot.

5. The regimental lines were built by the wing of this regiment at present occupying them; they were commenced on the 6th February 1873, and finished on the 15th March 1874; they are situated north and south between the military camp and civil lines, and are built for two complete companies only. The area occupied by them is about 89,879 square feet. The lines are smaller than the standard plan, and are built in 8 sections; 4 of them contain 96 huts and the other 4, 80 huts. There are quarters for 4 non-commissioned officers in each section; there are also 4 native officers' houses.

The dimensions of the different huts and their cubic capacity are as follows :—

Havildars' houses,	10 × 10,	cubic capacity	982·50	cublic feet.
Family quarters,	10 × 9	„ „	847·50	„ feet.
Single men's huts,	10 × 8	„ „	612·50	„ feet.

This measurement is exclusive of verandah, which is 3 feet wide.

Native officers' houses are $32\frac{1}{2} \times 32\frac{1}{2}$ outside measurement, with a cubic capacity of about 10,000 cubic feet. The whole are built on plinths, and are in good repair, being almost new. The level of water (sub-soil water) is about 15 feet in wells in the vicinity.

Ventilation is carried on by door-ways and apertures in the walls, which latter are filled in with tiles; the ventilation is very fair.

There is a small bazaar in the vicinity of the lines, consisting of two rows of houses, which separate the 7th lines from those of the cavalry, The population may be said to be about 114 and the residents are principally regimental followers belonging to the 7th Regiment N. I., 2nd Regimeut L. C., and Native Battery of Artillery, grain merchants, butchers, &c., &c. The bazaar is well looked after, and sanitation strictly euforced. There are no neighbouring villages within two miles, except the town of Rájkot, which is distant about three quarters of a mile. The draiuage is surface; there are no tanks.

6. The conservancy adopted by the 7th Regiment N. I. differs from that of the 28th. The first mentioned use the permanent latrines, which are built about 500 yards south of their lines. The lines being situated immediately between the private residences of the camp people on one side and that of the civilians on the other, no available ground could be obtained within a reasonable distance to introduce the trench latrine system for them; hence the necessity of having to use the permanent latrine buildings. The line conservancy is very good; the sweepings of the lines are collected twice or thrice daily, and deposited in two (walled) enclosures, one on each flank of the lines, from wheuce they are removed by a cart to a distance beyond the cantonment, where they are buried in pits northward of the camp. The sanitary arrangements in the 7th lines are good, with the one exception that the means for carrying away the collected rubbish from the lines are entirely inadequate for the amount of work required from it; this work devolves upon the station conservancy cart. For the conservancy of the entire camp there are two carts, one for the removal of all sweepings and rubbish from the lines of the 28th and 7th Regiments, 2nd Light Cavalry, Native Battery of Artillery, from all the compounds and roads in the cantoument, and from and about the hospitals of the above-mentioned corps; the other, the filth-cart, for conveying away all night-soil from the permanent latrines of the 7th Regiment, Native Artillery, Native Cavalry, Commissariat lascars, all followers, and from the hospital latrines of the above-named departments, along with that from the 28th Regiment one. The sweepings and latrine accumulations are carried to a very long distance beyond camp limits, and the work devolving on these two carts is enormous,—in fact, they are quite unable to perform the amouut of work required to be done. The consequence of throwing so much work on these conservancy carts, is that the filth-cart, conveying huge pans filled full of latrine accumulations, can be seen at all hours of the day passing through the station; this is not only disagreeable to the residents of the camp and civil lines, but also tends to produce epidemic diseases. At times this single cart, working from very early in the morning till long in after afternoon, is unable to remove all the night-soil, and from time to time it has to accumulate in the latrines from want of sufficient assistance to remove it. The cart for removing all the rubbish and sweepiugs has more to do than it can possibly perform. It is seen at work almost the entire day, but unequal for the task. Large heaps of rubbish may be seen here and there over the camp which have to accumulate; aud as they soon decompose, which must assist the first evil mentioned in producing diseases, I, therefore, urgently press the importauce of having two more carts employed as early as practicable, for if this state of things be allowed to go ou till the hot weather, I am afraid serious consequences may be anticipated from the insufficient conservancy of the Rájkot Camp.

7. The water-supply is obtained from wells; there are 11 Government and 9 private wells in the station. Four of the Governments wells contain excellent water, and last during the whole year, but the others run dry from time to time. There are two public wells close to the 7th Regiment lines, and the water from these is the very best and purest; they are surrounded by good, substantial, high walls, which prevent the slightest possibility of contamiuation from the outer surface. There are no drains of any kind close by. There is a large well close to the 7th Regiment hospital, which is only a few yards from the hospital latrine; the situation of this latrine ought to be changed, as there is danger of contamination of the water from it. The water, as a rule, from this well is excellent, but last hot weather it had to be closed on account of a number of cases of diarrhœa appearing after drinking the water. There is a large river close to the lines, which is used by the men for bathing and washing purposes; the water from this source is not good, as all the drains from the large native town, built on its westeru bank, open into it.

8. The food of the grain-eating men is wheaten flour and bajri flour, and generally first sort. The men say it is good. The Mahomedans and Native Christians eat mutton. Rájkot meat is not of the best quality at any time.

The supply of food is ample, and is tolerably cheap. The average rate of grain compensation paid to the men during the past year has been Rs. 1-12-0 to Rs. 2; vegetables of all sorts are scarce; wheaten flour is selling here just now at Rs. 2-8-0 per saye of 40 lbs.; mutton 8 lbs. per rupee.

9. The Government clothing is of the usual quality; the men's private clothing is of a very varied nature, some coming out in English fashion, the majority in costumes common to the parts from whence they hail, others dress according to their castes. The materials used are, as a rule, of very good quality; they are principally made up of good stout English manufactured cotton fabrics, English woollen cloths, &c. &c. The men dress well, and always look clean and neat. The recruits, on joining, receive a warm cotton jacket for drill purposes during the cold weather.

10. The duties, at Rájkot, of the corps consist of guards and parades, which are not excessive, and have been in no ways prejudicial to the men's health; but, on the contrary, the work required from them has had a beneficial effect on the physique of the sepoys of this regiment.

11. Morning parades, evening drill, and running drill in the appointed season, from the 1st of November to the 15th of March, is the chief exercise taken by the sepoy.

When off duty I imagine the most highly appreciated amusement is the music of the tom-tom to the sepoy; at certain times games take place, when wrestling, sword exercise, and various gymnastic performances may be seen. There is, I regret to say, no gymnasium in our regimental lines. Some few men practise trades in the regimental workshop. There are carpenters, carpet-makers, blacksmiths, and workers in cane; they turn out very good work, which is rapidly bought up.

12. There are no regimental lock-up rooms or cells; there is a station one under the Staff Officer.

13. The only marches in 1874 have been ordinary changes of small bodies of men between head-quarters and Tanna wing, and the return of the Dwárka and Barda Chowki detachments to head-quarters early in the year. Escorts within the district have also been furnished from time to time in the escort season.

14. The hospital is a large roomy building situated due west of the lines, and distant about 500 yards; the position is good, as there are no buildings between it and the sea or westerly breeze. This building was formerly the staff hospital, and is now common to the sick from all the corps stationed here, save those from the 28th Regiment, which has a separate hospital of its own. It is surrounded by a spacious verandah closed in on the east side, open to the west, and has a superficial area of 2,100 square feet (exclusive of verandah), with a cubic capacity of 26,565 cubic feet, and is covered by a double-tiled roof. The floor is a clay one, which is leeped four times a month. There are two dispensaries, one at either end of the building, north and south, and a bath-room, which has only been built lately. The situation of the building is an open one, and the ventilation, which is carried on by door ways and windows, is good; the hospital itself answers all the purposes required from it most satisfactorily. There is a contagious ward some little distance away, which is under the senior Medical Officer, and common to all the corps in camp.

There are two *pucka*-built houses for the hospital assistants, which accommodate the one attached to the 7th N. I., the one to the Light Cavalry, and the one to the Native Artillery. There are two cook-rooms, one for the artillery and cavalry, the other for the 7th; there is one stone-built latrine, the site of which should be removed, as it is in close proximity to the hospital well, which is one of the largest and best in the station.

15. The ventilation of the hospital is, as I said before, carried on by door-ways and windows, by which means abundance of air enters; but occasionally in the cold weather, more especially when the men close the windows and doors at night, on first entering in the early morning the atmosphere of the room is somewhat stuffy. This evil might be remedied by constructing two or three ridge-ventilators on the roof of the building for the escape of the heated air.

16. There has been no over-crowding in the hospital during the time under review. The sick have had ample superficial and cubic space. The lowest amount of superficial area and cubic space to each patient during the year has never been below 81·60 square feet of the first and 1,032·31 of the other.

17. There are no quarters attached to the hospital for the native medical pupils, which is not only inconvenient, but prevents the senior medical assistant from efficiently looking after the morals of the pupil, he (the pupil) having necessarily to live either in the bazaar, or

regimental lines, if he has friends in the latter. There are no quarters for the 2nd class servants; they accordingly live in the native town, which is a long distance from the hospital, and on this account are seldom present when urgently required. There is no dead-house in the station, and the absence of a building like this is much felt. The dispensary room of the 7th Regiment portion of the hospital is a part of the verandah partitioned off by matting only; at times the wind is very high, and blows in the matting, carrying away any letters, papers, &c., with it. This causes a great deal of annoyance; to prevent it, a stone or brick partition might be built, so as to take the place of the matting.

18. The hospital conservancy is well attended to, and no heaps of sweepings or rubbish are allowed to remain a moment longer than the present insufficient conservancy carts can remove them. The hospital has one large *pucka*-built latrine, which is well looked after, the night-soil from which is removed in pans by the station filth-cart to a long way from camp, where it is buried in pits.

19. The hospital water-supply is obtained from a large well, some ten yards from the hospital; it is one of the best wells in the station, the water from which is excellent, and during my residence here has never once gone dry; most of the bungalows in camp get their water from it. There is one very serious fault with respect to it,—the hospital latrine is close by, only separated from it by a narrow drain. This may be a very serious evil some day.

20. The average strength of the head-quarter wing of H. M.'s 7 Regiment N. I. during 1874 has been 324. The number of admissions into hospital has been 407, and the total treated 421.

Average daily sick	10·00
Treated to strength	126·84
Deaths to strength	·63
Deaths to treated...	·47

Ague very nearly supplied all the cases admitted and treated. The disease in the very great majority of cases was of the most simple nature. The type of the fever was most frequently quotidian. From the 15th of November 1874 to the 1st of January 1875 the sulphate of cinchonidine was tried in all cases of "intermittent fever" in doses varying from 5 to 10 grains four times a day: the result in the milder cases was favourable, but where the disease existed for any length of time prior to admission, and there were splenic or hepatic complications, I did not find the cinchonidine as effectual in stopping the return of the attack as the disulphate of quinine, which latter medicine I had to give in some few cases after first trying the sulphate of cinchonidine. I do not think this latter medicine will ever take the place of quinine.

Remittent fever gave 3 cases, of which 1 proved fatal. There were in all 3 severe cerebral and hepatic complications.

Dysentery gave 9 admissions. The cases were most amenable to treatment. Eight out of 9 of the cases were admitted during the rains, and the cause may be said to be the same, which predisposed to the prevalency of intermittent fever during those months, namely, exposure to wet and cold; in most of these cases there was marked congestion of the liver. I treated all the cases with large doses of ipecacuanha, varying from 25 to 40 grains, twice a day with the most favourable results.

Hepatitis gave 1 admission, and consisted in only what I imagine superficial inflammation of the organ, as the disease succumbed at once to immediate and decisive remedies, though the patient on admission could scarcely breathe, from most acute pain in the right hypochondrium.

Guinea-worm, which in Dharwar took the place of the prevailing disease here (ague), has only given this year 8 admissions, and 9 treated; they all occurred in the early part of the year, and since the month of June there has not been a case from this. During the year 1873 there were 52 admissions. There is little doubt but the active embryos of this disease were imported from Dharwar in the tissues of those who afterwards showed them, and that by this time they have fully exhausted themselves.

The 18 cases of contusions were made up of simple shoe-bites and bruises.

Two deaths took place—one from remittent fever, the other from pneumonia. The subject of the first was a young recruit, admitted into hospital on the 27th August with intermittent fever; he had been suffering from the disease for some time previousiy in the lines. On the 29th the fever assumed the remittent form, and that same afternoon high delirium set in, which on the 31st was followed by coma, and he died that same night. The other case was admitted with intermittent fever of the quotidian type, mild, and at first uncomplicated; on the morning of the 24th October very acute symptoms of inflammation of the lungs, accompanied by inflammation of the iliac portion of the small intestines, suddenly set in; he sank

very rapidly, and no treatment checked the progress of the disease in the slightest degree; he died the same night. Autopsy, nine hours after, showed that both lungs were much inflamed, being nearly solid posteriorly. The iliac portion of the smaller intestines was highly congested and inflamed for about 18 inches in length.

The other organs were healthy.

Nineteen men were invalided during the past year, principally on account of old age and length of service.

21. Those circumstances which predispose to intermittent fever were the principal causes of sickness, namely—in the rains—wet, damp, cold, and malaria; in the cold weather—violent changes of temperature, the days intensely hot, the nights bitterly cold. The months of August, September, and October gave the largest number of admissions, which were, respectively, 40, 62, and 75, principally ague.

22. The two deaths arose from remittent fever and intermittent fever with cerebral complications—in the first pneumonic, and intestinal in the other.

23. The subjects of the two deaths were Hindus.

24. The rain-fall, which was 27 inches and 20 cents last year, has a great influence in assisting in the production of the cause of the prevailing disease here—ague.

The drainage of the 7th Regiment lines is natural; there are no made drains. During the heavy rains in July and August last, the ground around the lines and the officers' compounds resembled so many tanks, converting the *maidan* into a marsh. The sun acting upon this, malarious exhalations were engendered, producing the great number of cases that came into hospital during those months.

25. There were no epidemics.

26. Thirty-six cases of primary vaccination took place, and 129 re-vaccinations.

27. The general health of the corps has been fair; the physique of the men is good.

28. There were no diseases calling for any special treatment.

H. M.'s 11th Regiment N. I.

Bhuj.—In medical charge of Surgeon-Major H. R. McDougall; Strength, 668.

Location and Movements of Corps.

1. The regiment marched from the camp of exercise at Chinchwad on the 31st December 1873, and proceeded to Bombay by road, arriving there on the 11th January 1874, having made ten marches and two halts. It remained under canvas at Bombay, camp being pitched near the Boree Bunder until the 17th, when it re-embarked on board the hired transport S. S. "Asia" belonging to the B. I. S. N. Company, which left Bombay on the morning of the 18th, and reached Mándvi, Cutch, about noon on the 20th. Part of the regiment disembarked the same evening and went under canvas, the tents being pitched about half a mile from the bunder; the remainder of the regiment disembarked on the following day. The regiment halted at Mándvi until the 24th, when it marched on Bhuj, which it reached, in three since marches, on the 26th January: it has formed the garrison at this station ever that date.

Detachments.

2. With the exception of small recruiting and escort parties and men on furlough the whole strength of the regiment has been at head-quarters during the year.

A considerable portion of the families accompanied the regiment; others have since joined.

Topography and Physical Geography.

3. Bhuj, the capital of the province of Cutch, lies about 38 miles from the sea-port town of Mándvi; to the north and north-east stretches the "Great Runn," a desert tract flooded at certain seasons and under certain conditions, over which the wind blows towards the end of

the year, and from whence, it is supposed, is brought the malaria causing the great prevalence of fever in October, November, and December.

The cantonment of Bhuj lies on a gentle slope in the middle of an undulating sandy plain almost entirely surrounded by a range of low hills, from three to five miles distant on the western horizon, and from five to fifteen on the eastern. The cantonment lies immediately at the foot of an eminence about 500 feet high, on which stands the hill-fort of Bhujia. The officers' lines are situated partly on the slope of the hill, the men's lines at its base; the plain is very little above the sea-level. The form of the cantonment is irregular; many of the houses which formerly existed have been pulled down, those remaining appear scattered about without any definite plan. The cantonment faces the west, and may be said to run north and south. The houses at the southern end are sheltered from N. and N.E. winds by the above-mentioned hill; all lie open to the W. and S.W. winds. At the back, to the eastward, lie the old artillery barracks still in good order. The town of Bhuj lies about three quarters mile from camp, and at a somewhat lower level.

The soil is sandy, lying on a substratum of coarse sand, sandstone, or igneous rock; the latter crops up in irregular masses here and there. Some of the sandstone is little more than compressed sand, with so very little cohesion that it may almost be crumpled between the fingers, and is rapidly worn away by water and traffic. During eight months in the year the country looks quite desert, but in the rains a wonderful quantity of grass springs up, the roots being deeply bedded in the sand. The country generally is very bare of trees; in the vicinity of wells are found a few babul, pipal, and nim trees, and here and there a tope of babul trees is found near a tank. In the vicinity of the station the general appearance of the country is barren in the extreme after the month of September, except towards the north, where around the Residency and town there are several gardens with clumps of trees, chiefly mango, nim, pipal, banyan, tamarind, and date.

Water. Two river-beds run from the southward on the east and west of the station and at a distance of from four to five miles; in one, I believe, a slender stream trickles during the greater part of the year. The water in the station is procured solely from wells. Two tanks exist under the town walls—one at the eastern, the other at the western extremity; they are filled by the drainage of the hills and plain to the southward; the eastern one soon dries up, but the water in the western one is permanent. Much filth must wash into it, and the water by the end of the hot weather must be very foul.

Drainage. The drainage of the country generally is rapid and complete; the water runs off or is absorbed very rapidly, a foaming torrent running dry two or three hours after the cessation of rain. There are no jheels or swamps in the vicinity.

Effect on Climate. 4. The result of the configuration of the country and the sandy and rocky soil is that, during the hot months, a dry hot wind blows pretty constantly from about 10 A.M. till sunset; it then cools down pretty quickly, and there is usually a cool breeze during the night and early morning, until, under the influence of the sun's rays, the heated ground again takes all the moisture and coolness out of the sea-breeze. By the middle of October the wind comes round to the N.W. and N., and is, consequently, from blowing across a greater extent of desert, drier and hotter than in the month of May: it usually dies away by evening, so that the nights are hot and close, making October a more trying month than May and June. During the monsoon months the rain-fall is comparatively small, but with a cloudy sky and a moderate breeze blowing nearly constantly day and night the climate is pleasant and not depressing. In November the wind has come round to the N. and N.E.; it ceases to be hot, but is extremely dry, causing the skin to crack, and the epidermis to peel off. This continues throughout December and January, when also the nights and early mornings are very cold, especially if there be any movement of air. The atmosphere has, however, been pretty constantly calm this cold season as yet. In March and April the sun's rays are powerful, but the atmosphere is not inconveniently heated.

Lines. 5. The lines are built on a gentle slope facing the west; they consist of eight rows of huts in two blocks, separated from each other by a street 80 feet wide. A central street, 200 feet broad, divides the rows unequally, five being on the right and three on the left. The rows are separated from each other by a street 100 feet wide; they run nearly east and west. The native officers' houses stand detached across the end of each row, and facing the east.

Available Space. As originally built, each block measures 200 feet by 18 feet broad and 7½ feet high; this was divided by cross partitions into compartments, each 12 × 18, having two doors on each side; each of these compartments it intended for four men, so that each man has nominally a space 6 × 9 to live in; this is, however,

encroached upon by the partitions which the occupants put up according to their own fancy. Each block has an enclosed court-yard running down each side, 12 feet broad; this in many instances is encroached upon by the men building out little cooking and washing places from their rooms. The roofs of the huts are single-tiled.

Each sepoy and naique has one compartment to himself; havildars and married men have two.

The native officers' quarters consist of eight detached buildings, each 60×30 feet, occupied by two officers—the rooms measuring 26×15. There is a 12-feet court-yard to the front.

Ventilation.

This is good in the hot weather, thanks to a strong and pretty constant S.W. breeze; the single-tiled roof also affords pretty free ventilation. Owing to the great drift of sand, which takes place, the floor of many of the huts is considerably below the level of the ground. Owing partly to this, partly to the men prolonging the roof to shelter the door-way, it is impossible to enter some huts without crouching down to the utmost. Any injurious influence that might result, is obviated by the fact that the occupants of the houses spend much of their time out of doors.

Bazaar.

The bazaar consists of a small block on the right flank consisting of three shops and the chowdri's house. The pattewalas and other followers live in a block of single houses on the left flank.

The Sudder Bazaar lies about a quarter of a mile to the north of the lines; it is built nearly in the form of a cross, contains but few permanent inhabitants, and is kept very clean to outward appearance; but, there being no public latrine, the ground in the immediate vicinity outside camp limits is in a very unsatisfactory condition. Funds, which have not yet been sanctioned, are necessary to effect a reform.

Neighbouring Villages.

The town of Bhuj, a walled city, with a very large population crammed inside, lies about half a mile to the northward of the cantonment. For a native town it is tolerably clean, but the houses are so crowded together that all sanitary rules must be supposed to be held in abeyance; fortunately the wind, even in the cold season, does not usually blow directly from it towards cantonments. It draws its chief supply of water from two tanks, one of which dries up long before the rains; the other must be a very concentrated essence of impurities. The water in the town wells cannot but be contaminated.

There are no villages in the immediate vicinity of the station. There are a few huts between the sudder and town wall, which are interesting, as they are believed to be the locality which has given a large percentage of admissions for primary syphilis within the last month. The subject is being investigated with a view to a remedy.

Drainage.

The drainage of the lines is complete: storm water rapidly runs off by water-courses running nearly parallel with the blocks of buildings. There is no system of drains connected with the lines themselves.

Tanks.

With the exception of the two tanks under the town wall there are none in the vicinity of the station.

Huts, Condition of.

The huts are in a fair state of repair; being old, the timber has suffered from age and the ravages of white ants and dry rot. They were repaired before last rains so far as turning the tiles and replacing any rafters that were utterly gone; but wood is so expensive here, that only essential repairs are practicable. I am informed that the leakage was comparatively slight during the rains. The huts are not built on a plinth, but on the ground level; owing to the extensive drift of sand, however, the floor of many of the huts is considerably below the present level of the ground outside.

Cubic Capacity.

The space allotted to each private, nominally, is a room $6 \times 9 \times 7\frac{1}{2}$, giving a cubic capacity of 405 feet. A havildar or married man has double this, or 810 cubic feet. The actual space is, however, very variable: some men live singly, others club together in messes, a variable amount of space being thus taken up by the partitions which are put up. These partitions are made of date-matting, plastered over with mud.

Disposal of Sewage.

There is no system of drains or cess-pools sanctioned; all refuse matters are ordered to be thrown out in front of the house, whence they are collected by the sweepers and removed daily in the conservancy cart.

The children use a corner of the court-yard, or the ground in front of the houses, for purposes of nature, the result being removed at least twice daily.

The native officers' houses have necessaries with trap-door opening outside the wall.

Depth of Sub-soil Water.

The sub-soil water stands at a depth, from the surface, of 40 feet, and the water in the wells in the lines is 9 feet deep.

Conservancy and Sanitary Arrangements.

6. The trench system of latrines has been in use during the year. Two mat enclosures are placed on each flank at a convenient distance from the lines, the one being for the use of males, the other for females. The enclosure is 20 × 24 feet. A trench is opened across one end, and is partitioned off into seven compartments by mat screens; this trench and the screens are advanced daily, until the whole enclosed space has been used up, when a fresh portion of ground is taken in. The soil on one flank is a sandy gravel, on the other a sandy loam, the site of an old garden, and both seem to answer the purpose well, as no nuisance has been experienced from the ground, which has been used either during the dry or wet season. After a heavy dew an offensive smell is sometimes perceptible in the morning for some distance from the trenches actually in use, and the same has been observed during the day, occasionally, with a moist heavy atmosphere; the smell, however, rarely, if ever, reaches the houses, and it is only on very rare occasions that the wind blows from the latrines in the lines.

The officers' compounds have standing latrines for the use of the servants; the contents are emptied into an air-tight receptacle at intervals, and these together with stable refuse and sweepings are removed in the morning by the conservancy cart to an enclosed spot well to the rear and leeward of cantonment.

Owing to the scanty rain-fall and the nature of the soil there is no excessive growth during the rains; any rank weeds are removed as necessary. The growth of trees is promoted as far as funds and means will permit; but under hand-watering poverty of soil, a strong wind during several months, and the ravages of white ants, their pr gress is not very satisfactory.

Water-supply.

7. The supply of water is obtained exclusively from wells; two of these are situated in the lines, but the water is brackish, and used only for purposes of ablution.

The drinking wells are at a distance of nearly half a mile from the lines, one to the left rear and three to the right front. The water in them is clear, bright, and pleasant to drink; it is hard but not perceptibly saline. It contains a small amount of vegetable *debris* from leaves and straws, which get blown in, as all the wells are uncovered: previous to the annual cleaning, in May last, the water contained a considerable amount of animalculæ, but this has not been observed since. It was found at one time that on certain festivals the Hindus were in the habit of throwing flowers and small jowari plants into the wells; a repetition of this has, of course, been strictly forbidden. The wells are either sunk through rock or formed of stone masonry, their crowns are paved with large stones at a good incline, and a trench round the edge collects and carries off surplus water.

Food—Quality of.

8. Owing to the sterility of the soil and the uncertain and scanty rain-fall, Cutch does not produce sufficient food as to quantity or variety for its inhabitants. Grain has, consequently, to be imported, chiefly from Guzerat; owing to the cost of carriage and the very high import duty—12 per cent.—it is, consequently, always dear. During the past year, however, the supply has been good, and the quality fair, and prices have ranged lower than in the previous year. I find that the amount of grain compensation for the past eleven months has averaged Rs. 3-14-5, whereas during the same period in 1873 it was Rs. 4-13-6—nearly Rp. 1 more.

The supply of vegetables during the cold weather is good, but during the hot weather the variety is small, and the supply deficient. This appears to have been less the case, however, during the past year than in some previous ones, and as new gardens are being made it is hoped that a further improvement will take place in this respect.

Beef is an unknown luxury in these parts, as the slaughtering of cattle is prohibited. Mutton is good and cheap, except during the hot months.

Fruit of various kinds is procurable, chiefly guavas, pomeloes, sweet and sour limes, citrons, pomegranates, plantains, grapes and melons; but, with the exception of the two last, the quantity is inferior, and the supply limited.

9. The clothing is, in my opinion, too heavy for the hot weather, but sufficient for the cold. A looser and baggier cut of trouser would be very desirable for the comfort of the men, especially in such motions of squatting, kneeling, and lying down as the present musketry drill entails; but I cannot say that I have observed any actual inconvenience, such as chafing, produced. The boot is a standing grievance; I am unable, however, to suggest any pattern that would be perfect when worn on a naked foot.

Clothing.

10. The duties of the men have been very light during the year; they have but few guards to take, and owing to a light sick list and a full strengh there has been no extra work. The parades do not appear to have been more than sufficient to give healthy exercise. I am informed that the average number of nights in bed has been 9·1 for havildars, 7·3 for naiques, and 5·6 for privates.

Duties.

11. There is an open-air gymnasum on one flank of the lines, in which many of the men exercise themselves, during the monsoon months, in various athletic feats under proper direction; but the attendance, even prior to the commencement of the drill season, was gradually falling off, probably owing to the want of inducement, such as competition with other regiments or the gaining of prizes.

Exercise, Amusement, and Occupation.

The men have no occupation except occasionally repairing their houses or the butts. The want of water and soil precludes the getting up of gardens, and the difficulty of procuring raw materials, or disposing of the articles when made, apparently checks any attempt on their part to pursue their different trades during leisure hours.

12. The are two cells adjoining the quarter-guard, placed side by side under a tiled roof; they face the prevailing wind, and have a verandah in front. Each has a small necessary on its outer flank. Each cell is 10 feet square and 14 feet high. The floor is paved with stones; there is a wooden bench on one side for the occupant to sit or lie upon. A window, $3 \times 1\frac{1}{2}$ feet, is placed at the top of the three outer walls; they are closed by wooden shutters.

Lock-up Rooms and Cells.

13. During the march from Chinchwad to Bombay nothing worthy of note occurred; the marches were easy, and the halts sufficiently frequent. The men's feet having become hardened by the previous march from Satara, and the ample exercise they got at the camp, the percentage of admissions for ulcerated feet was small. The men were in good health throughout the march.

Marches.

During the halt in Bombay, notwithstanding the offensive odours proceeding from the Carnac Bunder and vicinity, their health remained good.

On the voyage from Bombay to Mándvi the steamer was much crowded with women and children; but—thanks to the ample ventilation and the fine weather experienced, permitting of all hands being sent on deck in turns, and the lower decks being thoroughly cleaned and purified daily—no bad results were experienced.

Heavy rain fell on the night that the first portion of the regiment disembarked at Mándvi and it was followed by comparatively intense cold, with strong biting winds, leading me to expect a number of admissions amongst the older men, but such was not the case; in fact, with the exception of three cases, no bad result appeared to follow, though the cold was much greater than they could have been exposed to for some time previously.

14. The hospital is a fine, airy, detached building standing on an open site, with a gentle slope and rocky foundation; it faces the westward, and receives the full benefit of the sea-breeze, but is sheltered from the land wind N. and N.E. by the hill on which the fort of Bhujia stands. It has a completely free frontage, and the out-houses are 30 paces to its rear. To its right stands the old artillery hospital, which has been utilised in former seasons during the prevalence of fever.

Hospital and its Surroundings.

The building consists of a central ward, $96 \times 22 \times 19$, with a 10-feet verandah all round; that on the north end is closed in so as to form two rooms, 25×10 and 18×10 feet—one being used as a surgery, the other as a store-room and, when required, as an operating room. The half of the verandah at the south end is closed in so as to form two small rooms, 10×10 and 10×12—one of which is used as a store-room for bulky stores, the other as a separate ward for such cases as it may be deemed advisable to segregate. The other half of the end verandah and the side verandah are closed in to a height of 3 feet by a wall, and are protected above this by moveable mat screens, which can be raised or let down as required, so that these verandahs could be utilised in the event of an outbreak of sickness.

The floor of the wards and verandahs is of earth and small stones beaten down; it is leeped once a week.

15. That of the main ward is provided for by 16 side windows, each 5×4—the lower part closing by means of wooden shutters, the upper by glazed sashes. A door 7×4 occupies the centre of each side. In addition there are three large roof ventilators, each 12×8, with a height of 1 foot.

Ventilation.

Overcrowding.

16. There has been no over-crowding during the past year.

Accommodation.

The main ward can accommodate 30 patients and the small ward 1, without overcrowding; the front verandah might accommodate 10 and the back verandah 12 patients on an emergency.

17. No alterations have been made during the past year; the building has been kept in good repair. I have no defects to point out or recommendations to make.

Conservancy.

18. There are two sweepers attached to the hospital, one of whom is always on duty. The latrine is at a distance of 50 paces from the rear of the hospital; its floor is paved and carefully plastered; it is divided into five compartments, each provided with an iron tray removable at the back. These trays are emptied into an air-tight receptacle, which is removed every morning by the conservancy cart. No inconvenience has been experienced from the latrines.

The immediate vicinity of the hospital is kept clean, but there is no defined boundary of a compound. During the rains grass springs up all round, but at present the ground is bare sand.

Hospital Water-supply.

19. There are two bheesties attached to the hospital. A well is close at hand, the water of which is 47 feet from the surface and 12 feet deep; it is brackish, and is only used for purposes of ablution. The drinking and cooking water is brought from a well about a quarter of a mile distant, the favourite well of the station, from which all the officers and many of the men draw the supply. The water in it stands 47 feet below the ground level, and is 8 feet deep.

Sickness, Mortality, and Invaliding.

20. During the past year, 377 cases have been treated in hospital, 9 of which remained from the previous year, and 368 were fresh admissions; of these 349 were discharged to duty, 5 died, 4 were sent before the General Invaliding Committee, 1 was transferred under another heading of diseases, and 18 remained in hospital at the end of the year.

The average daily number of sick for the year was 14. The percentage of treated to strength was 56·4; of deaths to strength, 0·7; and to treated, 1·3. The percentage of daily average number of sick to strength was 2·1.

Febricula.

Cinchonidine.

Fever gave 112 admissions, of which 11 were febricula, 100 ague, and 1 remittent fever; the latter case died. If we omit it we have a percentage of 16 admissions for fever. The ague has been of a mild type and, with one exception, easily amenable to treatment by arsenic, quinine, and cinchonidine.

Syphilitic.

Rheumatic affections gave 22 admissions, or a percentage of 3·3. One case terminated fatally; the patient was of 17 years' service, and there was a syphilitic taint.

Gonorrhœa, Bubo, Chancre.

Primary syphilis gave 5 admissions, gonorrhœa 4, and bubo (syphilitic) 1; altogether 8 cases, or 1·5 per cent. The 5 cases of chancre and the bubo were all admitted within a month.

Conjunctivitis.

Conjunctivitis gave 8 admissions, or 1·2 per cent.; 2 were severe cases, the rest mild.

Nyctalopia.

The two cases of nyctalopia were very doubtful; the disease was stated to have commenced rapidly, and the defect disappeared nearly as rapidly under treatment.

Three cases of inflammation of the ear were apparently produced by cold.

The case of palpitation of the heart is peculiar, inasmuch as the disease appears to be of some years' standing, but only brings the man into hospital in the cold weather. The symptoms are most irregular, varying from an intermission every 4 or 5 seconds' beat to twice or thrice only in the minute; at other times no distinct intermission is perceptible, only great irregularity of the heart's action, and want of rhythm between the heart's beat and the pulse of the wrist. The cause has not yet been satisfactorily determined.

Diseases of the respiratory system gave 17 admissions, or 2·5 per cent. One case of phthisis terminated fatally; one case of bronchitis and one of emphysema were invalided.

Phthisis.

Diseases of the digestive system gave in all 60 admissions, or 9 per cent. Two cases were under treatment for salivation, apparently produced by mercury, though this was denied. One man died very suddenly.

Salivation.

One case of hæmatemesis yielded readily to treatment by astringents and subsequent saline purgatives.

Hæmatemesis.

Seventeen cases of dysentery, or 2·5 per cent., were admitted; the symptoms in all were well marked, but they yielded readily to ipecacuanha, opium, and gentian pills, with an occasional dose of castor oil.

The two cases of rectal abscess, one of which occurred in the person of a native officer, healed quickly after evacuation.

Three cases are entered as simple enlargement of the liver; they were admitted in June and July. The organ was painful on pressure, protruding beyond proper bounds, and there was slight jaundice. These symptoms gave way to treatment.

Three cases of congestion of the spleen were mild.

Two cases appear under disease of the urinary system; it was, however, only one patient, who was first admitted under cystitis. There were all the symptoms of stone in the bladder, but none could be detected; it was, however, at length found with difficulty when the man was placed under chloroform. He was operated on by the lateral method, and a stone weighing 200 grains was removed. The man made a good recovery, but it was prolonged by successive attacks of orchitis and by an irritable and unhealthy condition of the bladder having to be rectified.

Cystitis.

Diseases of the generative system gave 6 admissions. One of the cases of orchitis appeared to have been caused by the man stepping with one foot into a hole in the dark; there was no visible cause in the other three.

Orchitis.

The two cases of diseases of the male mamilla occurred in one individual; he first applied, with a painful swelling of the left breast, which he said was of quite recent origin. The pain subsiding he was discharged, but speedily returned, saying that the tumour was so painful that he could not wear his uniform; it was, therefore, excised and found to be apparently simple hypertrophy of the breast. Its recent origin and great pain were doubted; the man probably wanted to make out a case for invaliding, as he subsequently applied for pension, but was refused.

Male Mamilla.

Hypertrophy.

Diseases of the cellular tissue gave 15 admissions, or 1·5 per cent. Ten were cases of abscess, 5 of guinea-worm; of the latter two admissions were of the same individual. None of the cases appeared to be of local origin.

Cellular Tissue.—Guinea-worm.

Diseases of the cutaneous system gave 53 admissions, or 7·9 per cent. There were 16 cases of ulcer—most of them originating from shoe-bite, and 23 of boil. Five of the 7 cases of scabies occurred amongst recruits or men returned from furlough; the two others were recruit boys.

Scabies.

The case of corn was sent to Bombay to be invalided, but was sent back, and has spent his time in hospital since his return—the only malady apparent being a callosity in the centre of each heel, with such a tender condition of the subjacent parts that the man declares himself unable to place his heels on the ground. Various measures of treatment and discipline have been employed without effect.

Corn.

Callosity.

A fatty tumour was excised from a native officer's shoulder; it was of long standing, but was beginning to cause pain and inconvenience.

Fatty Tumour.

A case of snake-bite presented no general symptoms, but the leg swelled to half-way up the thigh, and the foot remained œdematous for ten days. One puncture only was found on the front of the ankle-joint. The man, who was bitten at night, said he had killed the snake, that it was the length of his arm, and about the thickness of his fore-finger.

Œdematous.

Injuries gave 46 admissions, or nearly 7 per cent. The case of fracture of the base of the skull rapidly terminated fatally.

A case of contusion of the eye-ball was said to have been caused by the man running in the dark against the end of a stick which was protruding from the wall of his hut.

A sprain of the back occurred in wrestling.

There were 38 admissions for contusions, 2 for sprains, and 3 for wounds of the extremities; none of them were very serious.

Mortality.

Five of the cases treated in hospital terminated fatally—1 from remittent fever, 1 from chronic rheumatism, 1 from pneumonic phthisis, 1 from salivation (death took place by syncope), and 1 from fracture of the skull.

Two deaths took place out of hospital—1 from syncope and 1 from suicide by hanging.

Invaliding.

Fifteen men were sent to Bombay to appear before the General Invaliding Committee—14 being combatants; 1, a bheestie, non-combatant. Of these 14 were pensioned and 1 remanded. Of the 13 combatants 3 were havildars, 2 of whom were returned as old and worn-out; 1 was rheumatic in addition. Two naiques were old and worn-out; the third was suffering from emphysema of the lungs. Of 7 privates, 6 were old and worn-out; a seventh was suffering from chronic rheumatism and general debility. The bheestie was old and worn-out, and suffered from bronchitis and chronic rheumatism. One naique, 2 privates, and 1 bheestie were sent from hospital; of these 1 private was remanded.

Principal Causes of Sickness.—Malaria.

21. There has been no particular sickness during the past year to be accounted for. A portion of the cases of ague was doubtless due to locally imbibed malaria; in others, however, the patients had suffered from ague at other stations.

The cases of rheumatism were induced by damp.

Most of the contusions, which were chiefly on the lower extremities, were due to the men stumbling in the dark against stones when going about bare-footed.

Principal Causes of Mortality.

22. Remittent fever is answerable for one death—this was due to local causes; a second was the result of an accident; in a third the disease was probably inherited; a fourth was the result of repeated attacks of rheumatism on an unhealthy and enfeebled constitution; a fifth was apparently brought about by the action of mercury on a constitution impaired by irregular habit.

Mortality according to Race.

23. Of the 5 deaths 4 occurred amongst Konkani Hindus; the fifth victim was a Punjabi Mussulman.

Influence of Rain-fall.

24. The rain-fall during the past year—12 inches 3 cents—does not seem to have exercised any prejudicial influence on the health of the men; it ensured a good supply of water, about which there was previously some anxiety.

Epidemic.

25. There were no epidemics during the year: a few cases of measles occurred in the lines during the months of May, June, and July. Fifteen cases were treated, of which 12 were children and 3 adults. One death resulted from bronchitis in the former.

Vaccination.

26. The whole of the men of the regiment have been examined during the year, and all who did not present tangible marks of vaccination or small-pox were vaccinated with the following result:—139 persons were operated on by 154 operations; of these 44 were successful and 110 unsuccessful.

All the children in the lines have been similarly treated, with the following result:—108 were primarily operated on by 128 operations, of which 96 were successful and 32 unsuccessful. It was asserted that several of these children had been vaccinated before, but no marks were visible.

Eight children were re-vaccinated by 15 operations, of which none were successful.

General Health and Physique of the Men.

27. The general health of the men appears remarkably good, and the physique of the majority is of a fair standard. Those who present an emaciated or feeble appearance are generally found to be men who have either large families here to support, or who are saving up money to send to their families or to bring their families here, or to be men just returned from furlough.

Treatment of Diseases when special.

28. I have no special treatment of disease to record. A packet of cinchonidine was furnished with the last half-yearly supply of medicine; but there has been so little fever, and the cases were of so mild a type and so easily amenable to treatment, that I have not yet had an opportunity of making any trustworthy observations as to its comparative value.

Special Observations.

29. I have no special observations to record as to the medical history of the year.

Resumé of the whole.

30. The regiment arrived in Bhuj on the 26th January 1874, and has been stationed here in its full strength since then. The men appeared in good health on arrival, and they do not seem to have deteriorated. The past year appears to have been healthy as compared with previous ones, judging from fever statistics. The rain-fall was somewhat above the average, that in June and July was nearly equal, in August about half in those months. To the same cause also may, I presume, be attributed the fact that the price of food has been less than last year. The lines appear well situated; external ventilation is very free during the greater part of the year. The huts themselves are not built on the standard plan, but they appear to answer their purpose sufficiently well.

The sanitary arrangements of camp appear to be well attended to, and the latrine system to answer well.

The duties of the men are light; it would, I think, be of benefit if they were usefully employed in road-making or otherwise. The hospital is a large, airy building, amply sufficient for the ordinary requirements of the regiment. The death-rate, deducting two deaths from violence, has not been unusually high; only one death is fairly attributable to local causes.

No comparison has been made between the sickness and mortality in this and the previous year, as in 1873 only part of the regiment was at head-quarters.

Pupils how often instructed during the week.

31. The medical pupil has been instructed in all the subjects comprehended in the half-yearly examination, on an average of three days in the week, for an hour at a time.

H. M.'s 2nd Regiment L. C.

Deesa.—In medical charge of Surgeon Barry.

Average strength at head-quarters.

Europeans	5·1
Natives	257

Squadron, Rájkot.

Europeans	1·5
Natives	136

Location and Movement of Corps.

1. The regiment has been stationed at Deesa throughout the year. The 2nd Squadron relieved the 3rd at Rájkot on the 25th November, and the latter, after a residence of one year in Kattywar, reached the camp on the 16th December, bringing four of their number suffering from ephemeral fever and ague.

Detachments.

2. The 3rd Squadron was at Rájkot from the 1st of January till the 26th of November; the 2nd from the latter date till the 31st of December. The squadron at Rájkot usually supplied a party to Drapa, a locality notorious for miasm. Fifteen sowars were always on out-post duty with the Political Agent at Pálanpur, and were relieved monthly. A native commissioned officer and 27 men were located at Baroda as escort to the Resident.

Topography and Physical Geography.

3. The cantonment of Deesa is situated in Northern Guzerat in latitude 24°16′ east, longitude 72°0′, 408 feet above sea-level, occupying an area of two square miles, on an uneven sandy plain pleasantly wooded with nim trees. The country around, dotted with stunted shrubs, is now—January 1875—bare and dreary, a scene of sandy "nallahs" fringed with thorns and cacti, overlooked towards the north-east by some rocky hills, and in the distance the dim outline of the Araveli range may be seen.

In the latter rises the Banás, the only stream in the vicinity, which falls into the Runn of Cutch.

Soil.

In the absence of organic remains it is impossible to refer the formation of Deesa to any fixed geological age. Probably it belongs to the Pliocene period of the tertiary system or the recent.

Examination of the Soil made on the 10th of January 1875.

Ground Temperature.

	At 7 A.M. F.	At 10 A.M. F.	At 2 P.M. F.
Thermometer on ground exposed to sun's rays	86°	90°	118°
Thermometer on ground in shade (no movement of air)	62°	68°	75°
Thermometer in soil, 2 feet below surface	74°	71°	86°

Analysis of Surface Soil.

The soil analysed was a fair specimen taken from a depth of 12 inches.

Mechanical Analysis.

Coarse sand	90·87
Fine sand soil and vegetable *debris* ...	9·09
Salts soluble in water	0·40
	100·00

The specific gravity of the soil was 1·437.

Water quickly permeated it, of which 33 per cent. was retained.

Qualitative Analysis.

Soluble in Water.

Sulphuric acid.
Chlorine.
Lime.
Nitric acid (a trace).
Nitrous acid (a trace).
Ammonia (a considerable amount).
Organic matter (a trace).

Soluble in Hydrochloric Acid.

Alumina.
Oxide of iron
Calcium carbonate.
Magnesic oxide.
Silicic acid.

Insoluble in Hydrochlolic Acid.

Alumina and iron.
Silica.

A portion of the soil was mixed with distilled water, and gave a decided alkaline re-action, turning red litmus quickly blue.

Quantitative Analysis.

100 parts of soil contained—

Ferric oxide (Fe_2O_3)	2·39
Alumenic oxide (Al_2O_3)	3·4
Magnesic oxide (M_9O)	4·608
Calcic oxide (Ca O)	1·37
Silicic anhydride ($Si O_2$)	83·457
Sulphuric acid (So_3)	·125
Water and ammonia ($H_2O + NH_3$)...	2·2
Organic matter	2·25
	99·800

Water.

As directed by Deputy Surgeon-General Wyllie, M.D., I made analyses of the principal potable waters used by the troops in Deesa according to Dr. Macnamara's scheme. The most impure was from one of the

chief wells used by the 83rd Regiment. The albumenoid ammonia, as determined by Wanklyn and Chapman's process, was at the rate of ·00038 grammes per litre, or ·0266 grains per gallon. According to Wanklyn's standard, ·0056 grains per gallon is the maximum which ought to exist in tolerably good water.

Drainage. No system of drainage in camp; but as the general declivity is towards the bed of the Banás, the numerous "nallahs" which intersect the ground act as surface drains, and rapidly convey the storm waters into the river.

Effects of Climate. 4. As the climatic influences include soil and malaria, solar agencies, water, humidity, movement of air, &c., I shall consider separately the effects of each.

Soil. Owing to the depth of the ground or sub-soil water averaging 51 feet in the cold season, the soil is comparatively dry (1·8 per cent. of water), not favouring the decomposition of organic matter and the evolution of miasm.

Malaria. The factor, whatever it may be termed, which causes the paroxysmal fevers, exists in the soil of Deesa. After the rains, when the ground water has had time to rise and fall, miasmatic diseases are at the maximum.

Temperature. Judging from the number of admissions into hospital, the hot season is the healthiest of the year. Paroxysmal fevers are then always at the minimum. The most oppressive and enervating time is just before the rains, when with a temperature varying from 106° F. to 119° F. in the shade the atmosphere is charged with electricity, saturated with moisture, and frequently stagnant. Then Europeans suffer with prickly-heat and boils, and exertion is irksome. Only in the cool of the morning, when a grateful breeze springs up, can refreshing sleep be obtained.

In October the daily range of temperature is often 34° F.; this rapid fluctuation is exceedingly trying, often inducing ephemeral fever, bronchitis, and neuralgia.

Humidity. With the exception of three or four months after the rains, the air is very dry. The dry atmosphere seems to disagree with chest affections, especially in children. In the cold weather dew is very heavy in Deesa.

Light. In the hot season, when the direct rays of the sun are most powerful, painful sensations in the retinæ and a feeling of tension of the eye-balls are experienced by exposure to direct and reflected rays of the sun and radiant heat from the sand.

Movement of Air. During May and June, towards evening, often dust-storms cloud and darken the atmosphere; the hot air, blowing from the south-west, carries pulverized sand, irritating the conjunctivæ, drying the skin, and causing a feeling of lassitude and oppression. In November, December, and the first half of January, sharp intermittent east winds blow, exciting catarrhs, bronchitis, rheumatism, and neuralga, especially in the young and old.

Meteorological Observations, noticing the Pressure of the Atmosphere, the Temperature, Humidity of the Air, Rain-fall, Amount of Ozone, Cloud, Prevailing Winds, and the Variations of the Weather in Deesa.

Year and Month, 1874.	Localities at which Observations were made.	Reading of Barometer.				Temperature of Air.							Dry and Wet Bulb.		Mean deduced Dew-point.	Mean Degree of Humidity.	Rain.		Ozone.		Wind.		Cloud.	
		Mean for Month.	Highest in Month.	Lowest in Month.	Range.	Highest in Month.	Lowest in Month.	Range in Month.	Mean of all highest.	Mean of all lowest.	Mean Daily Range.	Approximate Mean for Months.	Mean of Dry Bulb.	Mean of Wet Bulb.			Number of Days it fell.	Amount collected.	Mean at A. M.	Mean at P. M.	General Direction.	Estimated Strength.	A. M. 0 10.	P. M. 0 10
		In.	In.	In.	In.	o	o	o	o	o	o	o	o	o	o									
January	Meteorological Observatory, Deesa.	29·761	29·914	29·576	0·338	89·4	38·0	51·4	78·4	48·9	29·5	63·7	71·0	52·9	42·8	0·404	2	0·030	No test papers.		N.N.E.	2	3	3
February		29·687	29·855	29·407	0·448	91·1	42·9	48·2	83·8	51·6	32·2	67·8	77·8	56·1	44·9	0·354	1	0·006			N.E.N.W	2	1	1
March		29·580	29·802	29·399	0·403	99 1	52·6	46·5	92 7	63·6	29·1	78·2	86 3	62·8	51·2	0·338	...	...			W.	3	2	2
April		29·533	29·730	29·351	0·379	108·9	58·6	30·3	102·4	71·3	31·1	86·9	95·8	67·5	53·3	0·272	...	...			N.W.	2	2	2
May		29·375	29·531	29·228	0·303	116·5	77 4	39·1	106 1	81·4	24·7	96·6	98·6	74·1	61·9	0·338	1	0·084			W.S.W.	3	1	1
June		29·273	29·535	29·063	0·472	108·4	74·5	33·9	99·8	82·3	17·5	91·1	92·9	79·2	72·4	0·545	8	3·348			S.W.	2	6	7
July		29·299	29·439	29·067	0·253	100·4	75 9	24·5	93·9	80·1	13·8	87·0	87·7	78·8	74·3	0·673	16	7·338			W,S.W.	2	8	8
August		29·356	29·514	29·143	0·371	91·7	74·0	17·7	87·1	76·5	10·6	81·8	82·3	76·4	74·0	0·763	15	14·958			W.	2	8	8
September		29·429	29·563	29·274	0·289	101·1	70·3	30·8	93·9	76·9	17·0	85·5	87·5	76·8	71·4	0·610	6	1·216			W.	2	5	4
October		29·563	29·742	29·434	0·308	100·0	56·1	43·9	97·2	62·6	34·6	80·0	89·4	67·9	56·6	0·365	...	...			N.N.W.	1	1	1
November		29·716	29·828	29·592	0·236	93·7	49·9	45·8	90·2	53·3	36·9	71·8	82·7	60·7	49·7	0·342	...	...			E.N.	1	1	1
December		29·755	29·890	29·608	0·282	88 5	44·1	44·4	83·8	52·0	31·8	68·0	75·7	57·6	47·3	0·399	2	0·022			N.N.E.	2	2	3
	Mean	29·527	29·695	29·344	0·340	99·07	58·68	37·88	92·44	66·71	25·73	79·87	85·64	67·52	58·32	0·450	51	27·002	...	...	...	20	33	34

5. The lines, which are built of brick with tiled roofs, consist of five rows of double houses, 48 yards apart, parallel to each other, ranging east and west. Four of the above are 124 yards long and 27 yards in width, and contain 62 apartments. The remaining line contains 80 houses, and is 159 yards long. They are not built on plinths.

Lines—Available Space.

The sowar's house comprises one apartment only, the cubic space being 16′ × 10′ × 11′ = 1,760 cubic feet. This space is ample for the bachelors, but the married erect small enclosures in front of their houses. There are no arrangements for the disposal of refuse water. No urinal or drain for liquid impurities.

Ventilation — Very defective, only one opening—the door, which serves as inlet and outlet, the inspired air being vitiated with the products of respiration.

Sudder Bazaar. — Separated from the rear of the lines by a thoroughfare 50 yards wide. Notwithstanding, the health of the men does not seem to be affected by proximity of the civil population.

6. The nearest village is Rájpur, a vicinity usually in a most insanitary condition. It is about 600 yards to the south-west between camp and old Deesa. Between the latter and the village of Rájpur the Gaekwar's Horse lines are located.

Neighbouring Villages.

Drainage. — Only surface drains extemporized during the rains. Drains 6 to 8 feet deep and 20 feet separate should be made; they would drain the soil, and carry off house and surface water, and all liquid impurities.

The floors of the houses should be chunam to prevent the emanation of watery vapour or volatile substances from the ground.

Tanks. — None.

Conservancy and Sanitary Arrangements. — There are three latrines—one for females and two for males—situated on the outside of the cavalry camp. Being south-west of the lines, during the monsoon the wind blows over them towards the latter. The sanitary state of the lines is satisfactory. The ground in front of the men's houses is swept daily, and the rubbish removed by carts.

Water-supply. — 7. Obtained from three wells in the lines.

Imperfections. — I made the following analysis in November 1874 of one of the well-waters used by the sowars. The water was obtained from a well on the right flank of the lines in cavalry camp. The well is built of "*pucka*" brick with mortar, and is environed by a ridge and platform of stone to prevent water from falling back into it. Depth of water in well 5 feet; distance from the surface of the ground to the water 47 feet. The water is principally used by the Mussulmans, who consider it good.

A.—Physical Examination.

1.—*Qualitative Analysis (a) of Fresh Water from the Source.*

1.	Colour	Colourless; height of column of water 8 inches.
2.	Smell	Earthy, especially when heated to 100° Fahr.
3.	Taste	Earthy, especially at 100° Fahr.
4.	Turbidity	Clear.
5.	Presence and nature of vegetable or animal forms.	None apparent.
6.	Mechanical impurities, and their nature	Very finely divided; sand in suspension.

(*b.*)—*Of Water after standing 72 hours.*

1.	Any change in physical properties of the water ...	None.
2.	Development of organized forms, their nature and quantity	Under the miscroscope the following were seen, viz., small quantity of vegetable tissue, mycelium and spores; a few moving infusoria, especially englena viridis and actinophrys sol.

B.—Chemical Analysis.

(a.)—Of Unconcentrated Water.

1.	Re-action	Alkaline, which was permanent.
2.	Free carbonic acid ...	Present.
3.	Sulphuric acid	Considerable quantity.
4.	Nitric acid	A trace.
5.	Nitrous acid	Re-agents caused a very faint caloration.
6.	Chlorine	Considerable quantity.
7.	Sulphuretted hydrogen ...	None.
8.	Lime	Present.
9.	Iron	None.
10.	Lead	None.

(b.)—Of Water concentrated to one-fourth its original bulk.

1.	Re-action	Alkaline.
2.	Nitric acid...	Present.
3.	Phosphoric acid	None detected.
4.	Silicic acid	Present.
5.	Iron	None detected.
6.	Magnesia	Present.

Quantitaive Analysis.

(a.)—Of suspended Matter.

		Grammes.	Grains per Gallon.
1.	Total amount per litre	0·01	0·70
2.	Of combustible matter per litre.		

(b.)—Of dissolved Constituents of the Water.

A.—Hardness.

1.	Hardness total	6·2°	Clarke's scale.
2.	„ removable ...	1°	„
3.	„ permanent ...	5·2°	„

B.—General Analysis.

		Grammes per Litre.	Grains per Gallon.
1.	Total solids per litre dried for one hour at 248° F.	·42	29·4
2.	Effects of ignition	Considerable blackening disappearing quickly; odour of burnt horn.	
3.	Silica	·06	4·2
4.	Oxide of iron, alumina, and phosphates	·05	3·5
5.	Lime (Ca O)	·028	1·96
6.	Magnesia	·0432432	3·027
7.	Alkaline chlorides	·26	15·17
8.	Chlorine	·021	1·47
9.	Sulphuric acid	·01372	·960464
10.	Nitric acid	·0004452	·031164
11.	Nitrous acid	·00805	·5635
12.	Phosphoric acid	.....	.....
13.	Sulphuretted hydrogen	.....	.....
14.	Ammonia, free	·000024	·00168
15.	Albumenoid ammonia	·000181	·01267
16.	Amount of oxygen removed by readily oxidisable matters	·00034	·0238

	Grammes per Litre.	Grains per Gallon.
17. Amount of oxygen removed by oxidisable matters of water heated to 60° cent. (= 140° Fahr.)	·00064	·04480

Sources of Impurity.

1st.—From decomposition of organic matter (vegetable) in the soil subjected to variations of the ground water.

2nd.—From horse-urine and waste house-water percolating through the sand.

3rd.—No doubt in the hot season dry, pulverized, horse manure is carried by the frequent high winds and deposited in these open wells.

4th.—Sub-soil soaking of surface washings during the rains.

Remembering that each well drains an area of about 200 feet in diameter on the surface, and that a great quantity of organic matter (horse excreta) is daily deposited on the sand—it being still uncertain whether the action of the latter on the former is chemical—it is surprising the water is so free from organic impurities. It is desirable to keep the wells covered, especially in the hot season. They should also be periodically drawn dry and thoroughly cleaned.

Food—Quality of, and whether abundant and cheap.

8. The quality has been good, supply *plentiful*, and price moderate throughout the year.

Sowar's daily Diet during the year, showing the Quantity and Cost.

	Hindus.		Mussulmans.	
		Rs. a. p.		Rs. a. p.
Wheaten flour	1½ lbs.	0 0 10	1½ lbs.	0 0 10
Dall (*cajanus indicus*)	4 ozs.	0 0 2	.....	.....
Rice	8 ozs.	0 0 9	8 ozs.	0 0 9
Mutton	8 ozs. twice weekly.	0 0 9	8 ozs.	0 0 9
Ghee	4 ozs.	0 1 0	4 ozs.	0 1 0
Vegetables (including potatoes)	4 ozs.	0 0 3	8 ozs.	0 0 6
Curry-stuff, with salt, pepper, cloves, coriander, garlic, &c.	4 ozs.	0 0 4	4 ozs.	0 0 4
Firewood	6 lbs.	0 0 1½	6 lbs.	0 0 1½
Total	3 lbs. 8 ozs.	0 4 2½	3 lbs. 8 ozs.	0 4 3½

This diet comprises the different aliments essential to maintain nutrition. Calculating according to Dr. Parkes' table, the proportion of the nitrogenous substances to the fats and carbo-hydrates is nearly as follows, viz. :—

Albumenates	3
Fat	5
Carbo-hydrates	10

Contrasted with Dr. Parkes' standard diet for a male European adult, the fatty substances are in excess. The diet of the Hindu and Mussulman is nearly the same, and both have two meals daily. A few Brahmins never touch animal food, and take, instead, milk and dall or a cheaper pulse. When, on account of caste, animal food cannot be taken, the legumenosæ constitute a large proportion of the diet of the Hindu, owing to the large amount of nitrogenous substance they yield. Some of the poor men with large families are compelled to use the cheaper grains of bajri (spiked millet or *pencillaria spicata*) and jowari (small millet or *sorghum*).

Clothing.

9. *a.*—Fatigue dress for ordinary regimental duties. Loose fitting, light-blue serge jacket composed of woollen stuff, too warm for the hot season, but well suited for the cold weather. Trousers composed of thin cotton material dyed with indigo—the latter in the rains colouring the under-

clothing, and giving a disagreeable smell. Excellent for the hot weather, but for the cold entirely unsuited. Forage cap without a peak, which serves as tôpi for the full dress on the line of march, and in the hot season a white puggree is worn round it, and from the back part hangs a flap, protecting the nape of the neck from the direct rays of the sun. The whole has the effect of lowering the temperature of air in the cap from 4° to 5° F. I consider the cap inefficient as a protection from cold, rain, direct rays of the sun, and sword-cuts. No ventilation whatever in it. The cloak is of good quality and ample size. The shoes are of coarse leather, badly fitting, causing abrasions of the toes. It would be a great boon to the sowar were he allowed socks, which would prevent the continual admissions into hospital with trivial foot-sores.

b.—The full-dress is :—Tôpi as above. Alkalic or tunic made of French grey woollen cloth, tight fitting, with skirts. As the men wear the *kumburbund* tightly, difficulty in quickly elevating the arms above the head is experienced. Useless constriction caused by the kumburbund after a hearty meal, hindering the digestive and assimilative processes, frequently induces giddiness. Thick dark-blue cloth breeches, tight-fitting, with white stripes down outer sides. They are usually worn too tight, making the knees stiff, and causing difficulty in mounting. Long, Boots.—Leather good, and well made; they are too heavy, weighing 5½ lbs., and occasionally cause abrasions on ankle and instep. Could not suitable leather be fixed at the bottom of the trousers, and dispense with the long boots?

Duties : their Effect on Health.

10. Exercise parades, four times weekly in the cold weather, have a bracing effect on officers and men. The guard duties are comparatively light. A few men contract paroxysmal fever whilst in out-post duty at Pálanpur, which is not very amenable to treatment.

Exercise, Amusement, and Occupation.

11. As attendance at the gymnasium is optional, few embrace the opportunity afforded for athletic exercise. All recruits should be compelled to attend. Athletic games are held periodically, and comprise wrestling, single-stick, and other native pastimes. During the day the sowars attend to their horses, clean arms and accoutrements, and during their hours of relaxation some amuse themselves with music or reading. Few can swim. I am of opinion that every recruit should be taught to swim. It is excellent for health, and may be of great use to him on field service.

Lock-up Rooms and Cells.

12. Two cells built of "*pucka*" brick and mortar on plinths raised 15 inches above the ground : total cubage of each, 1,700 cubic feet.

Marching.

13. In the cold season the regiment often marches a few miles out of camp. Annually a squadron marches to Rájkot to relieve the one located there.

Hospital and its Surroundings.

14. Excellent site on a rising plot of ground four hundred yards from lines, bounded on the north and east by officers' bungalows.

Natural drainage very good.

Ventilation.

15. Excellent.

Over-crowding.

16. None.

Accommodation and Defects.

17. Constructed to hold 22 beds—total cubic space=35,860 cubic feet. Floor space 2,079 square feet; ground space for each patient when hospital is full, which is rare, 94½ square feet; cubic space for each, 1,630.

Improvements.

The only improvement during the year was the construction of an excellent bath-room in the verandah, which has been well fitted up.

Requirements.

A ward for staff cases and a separate ward for contagious diseases. There is no suitable room for operating in.

Recommendations.

That a hospital apprentice or medical pupil be allowed to help the hospital assistant to carry on the extra work of staff, details, and telegraph department.

18. The latrines are daily cleaned, and McDougall's powder sprinkled on the floor once every morning. The dry-earth system was introduced two years ago, but as only sand was supplied, which is inert, it was discontinued. All rubbish and filth are removed daily from the compound.

Conservancy.

Water-supply. 19. Ample supply from a well in the compound.

Sickness, Mortality, and Invaliding. 20. The average strength at head-quarters during January was 311, admissions 38, treated 34, and daily average sick 9·8. Chief diseases were mild ague, rheumatism, and, as usual, contusions. A sowar who had suffered repeatedly from paroxysmal fever at Drapa was admitted with severe ague; but in three days acute pneumonia supervened, and, although every effort was made to combat the disease, he sank in six days. In February the admissions were 13, treated 26, daily average sick 5. The principal affections—contusions and dysentery, the latter caused by exposure to cold—were of mild type. Throughout March the average strength was 264. Quotidian ague and colic prevailed. During April the admissions were 15, daily average sick 8·8, prevailing affections quotidian ague, sub-acute rheumatism, ulcers and boils. In May the chief diseases were gonorrhea and secondary syphilis. One case of mild hepatitis. In June the principal causes of admission were affections of the genera-live and urinary systems. Two cases of secondary and one of tertiary syphilis. One case of latent aneurism of abdominal aorta greatly benefited by 30-minim doses of tincture of digitalis. Whilst I was absent on leave at Mount Abu, a native commissioned officer died of heat apoplexy. As he was a very corpulent man, addicted to alcoholic stimulants, probably he had atheroma of the cerebral arteries. During July admissions 39, treated 50. Prevailing diseases—ague, chest affections, rheumatism, and contusions. The admissions in August were 25. Principal complaints—ague, conjunctivitis, and contusions. One case of dysentery and one of hepatitis, both mild. Two native comissioned officers died in this month. Throughout September treated 31, daily average sick 12·8. Quotidian ague was the prevailing affection. Two cases of secondary syphilis, one of which was very obstinate. In October, 64 were treated out of a strength of 292; daily average sick 17. There was one case of acute dysentery, which terminated favourably. Prevailing ailments—ague, conjunctivitis, and contusions. In November average strength 143, the 2nd Squadron being on the line of march to Rájkot. Admissions, 16. Daily average sick 10,—5 of the latter being invalids. December.—Admissions 18, of which 7 were contusions and 5 were cases of quotidian ague; all mild. The average strength of the regiment at Deesa was 257, admissions 282, and the deaths, 4, being in the ratio of 1,097·27 and 15·56 per one thousand of mean strength. The admissions were 31 less than those of 1873; the mortality double. There were 13 invalids pensioned.

Principal Causes of Sickness. 21. The chief causes, in their order of frequency, were as follows, viz.:—

1st.—The agent called miasm.
2nd.—Exposure to cold; rapid change of temperature from heat to cold.
3rd.—Exposure to wet and dampness.
4th.—Perhaps water impurities.
5th.—Poor food badly cooked.
6th.—Falls and kicks from horses.
7th.—Badly-fitting shoes causing abrasions.

Principal Causes of Mortality. 22. The causes of the four deaths during the year were as follows, viz:—1st.—Pneumonia consequent upon exposure to cold, ending in obliteration of air cells of left lung. 2nd.—Exposure to wet and cold, inducing broncho-pneumonia in an asthmatic old man. 3rd.—Heat apoplexy, induced in an old man by sedentary habits, full diet, chronic alcoholism, and exposure to a continued high temperature. 4th.—Old-standing stricture and chronic abscess of perineum, combined with pyrexia of remittent type, in an old man.

Mortality according to Race. 23. The deaths comprised 2 Hindus and 2 Mussulmans. Three were old and worn out.

Influence of Rain-fall. 24. 1st.—Lowering the temperature about 36° F., varying according to the quantity of rain. 2nd.—Lessening evaporation from the skin, and herhaps diminishing the exhalation of watery vapour from the lungs. 3rd.—Immediate increase of admissions into hospital from catarrhs and ephemeral fever. 4th.—After a few weeks, paroxysmal fever prevails.

Epidemics. 25. No epidemic in 1874. Although small-pox is endemic in Deesa, no cases occurred during the year. No cholera since 1869.

Vaccination and Re-vaccination.

26. During the year, 31 children were successfully vaccinated; six remain too young to undergo the operation. All the men are protected by small-pox or vaccination. No re-vaccination.

General Health and Physique of the Men.

27. General health good; physique, on the whole, fair—rather better than the average native.

Treatment of Disease when special.

28. No special treatment.

Special Observations.

29. I am of opinion that in every case *post-mortem* examination should be compulsory.

Resumé of the whole.

30. From the foregoing data it will be seen that the general health of the sowars in 1874 was good. Although the total admissions were less than last year, the daily average sick (10·97) was greater. This was due to three invalids, who were over four months in hospital, being too weak to proceed to Ahmedabad to appear before the Annual Invaliding Board. There were 13 invalided, and the same number enlisted. The invaliding was chiefly due to chronic rheumatism, tertiary syphilis, and the effects of accidents incident to the sowar. The mortality was greatest in the month of August, about twenty-five days after the first heavy rain-fall. Three native officers and one sowar died in 1874. All the former were over 50 years of age, unfit for active service. The greatest daily average number of sick was in October. I am of opinion that this corresponded with the fall in the sub-soil water, with a powerful sun causing great evaporation from the soil. Of 12 cases of dysentery all were mild, saving one of acute form caused by exposure to cold. There were only a few cases of mild hepatitis, caused by exposure to cold and moisture. The great factor in the causation of disease was malaria. Next in importance were rapid changes of temperature, especially from intense heat to comparative cold. When sudden lowering of the temperature is not met with adequate clothing, a chill is caused, internal congestion follows, re-action ensues, and according to the diathesis, &c., ephemeral and ardent fever, rheumatism, inflammation, and neuralgia are produced.

H. M.'s 18th Regiment N. I.

DEESA.—In medical charge of Surgeon-Major BROWN; Strength, 620.

Location and Movement of Corps.

1. The head-quarter wing of this regiment marched into Deesa on the 26th of November 1873; from Rájkot the left wing arrived here from the same station on the 4th of March 1874. The regiment may, therefore, be said to have been stationed at Deesa during the greater part of the year 1874.

Detachments.

2. There has been no detachment duty, but a good deal of escort, which commenced with the cold season.

Typography and Physical Geography.

3. The station of Deesa is situated towards the northern boundary of Guzerat, in the territory of His Highness the Dewan of Pálanpur, close to the frontiers of Sind and Rajputana. It is on a gradual incline, the slope being towards the river, a perennial stream which runs along its western boundary. The highest point of the camp would, at a rough guess, be about 40 feet above the river-bed. The range of hills of Mount Abu lie about 50 miles towards the N.E.; they rise to an elevation of about 5,000 feet; and beyond Abu, northerly and easterly, run ranges of hills apparently of about the same elevation; they are all distinctly seen from Deesa. The country immediately around Deesa is rather thinly populated and sparsely cultivated; the soil is a sandy loam, consisting principally of silica,—from its appearance I should say full 95 per cent. It is, however, wonderfully fertile. The gardens in camp grow fruits and vegetables in abundance; trees grow rapidly and luxuriantly.

The water is remarkably good and the natural drainage is good, facilitated materially by the extremely porous nature of the soil and the incline towards the river; indeed, to judge from appearances and natural advantages, Deesa ought to be healthy.

Effects on Climate.

4. Not having been at Deesa all the year round—I arrived in June 1874—I am unable to state from experience how the climate is affected by its topographical situation; but one thing I can affirm, the climate is treacherous, cold winds set in from the eastward at nights very frequently in the hot season preceding the monsoon, and are the cause of many an illness from incautious exposure. The neighbouring hills no doubt account for this, where a good deal of rain generally falls. Long prior to the setting in of the monsoon at Deesa, and during the monsoon months, the climate is very changeable, the greatest vicissitudes occur on the very shortest notice,—all to be attributed, I think, to the same cause, viz., the setting in of the wind from the direction of the hills. Sand storms prevail in the hot season.

Lines.

5. The Native Infantry lines at this station are situate at the extreme western boundary of camp, close upon the river-bed; the river itself runs about 300 or 400 yards from the lines. They occupy the lowest piece of ground at the station, perfectly flat; and about 15 feet above the bed of the river a dry nallah runs along the back of the lines, towards the N.W., and behind this a native village. The bazaar lies about 300 yards to the south. There are no tanks. The natural drainage cannot but be bad in such a situation. Trees, however, grow in and about the huts and lines, and contribute to shade them from the sun's rays, and probably to absorb malaria. The situation is no doubt bad, but it would be difficult to find another suitable. The trees and the vicinity of the river make it very desirable for natives, and is of great convenience to them; but as the present lines must have been built fifty years ago at least, the ground must naturally be saturated with sewage. In my monthly sanitary report since I have been here I have reported these lines as old, inferior, and bad in every way. I subjoin a statement of their exact condition at present. Each hut gives about 750 cubic feet of space. Ventilation none, but what is obtained through the tiles of the roof. The floor of the huts are not raised above the surface of the ground on which they are built. The only provision for this is a hole in the wall of the hut, through which passes any water used for bathing, washing, &c., whence it percolates into the soil. In fact these lines are built in the old style, and should be condemned.

Conservancy and Sanitary Arrangements.

6. Latrines on the trench system are used both by men and women; the latrines are placed in a very good spot, in the dry bed of the river, full 15 feet below the level of the lines. Two sweepers are kept for keeping the lines clean and removing filth.

Water-supply.

7. Excellent water is procured from wells, whose sub-soil depth is 30 feet. The water at this station is being analysed by the Staff Surgeon, and a full report will soon be made on the subject.

Food—Quality of, and whether abundant and cheap.

8. Is abundant, cheap, and good; vegetables plentiful.

Clothing.

9. There has been no change in the sepoy's uniform during the current year.

Duties, and their Effect on Health.

10. The duties have been light, giving the sepoy about 4½ nights in bed during the cold season. There is a good deal of trying escort duty, but in other respects there is no hard duty of any kind at this station.

Exercise, Amusement, and Occupation.

11. In this respect there is nothing organized, no gymnastics, or anything of the kind. Occasional sports at the gymkhana is all the amusement provided for the native soldiery.

Lock-up rooms and Cells.

12. There are 8 cells—4 of which are tolerably well ventilated, 4 of them have none whatever. This has been reported by me in my sanitary report; but as 4 cells are considered enough for a native regiment, this is satisfactory.

Marches.

13. There have been no marching out during the year. Occasional brigade parades are held, when the troops are frequently taken some distance out.

Hospital and its Surroundings.

14. The hospital is well situated on high ground; no bazaar or native huts in its immediate neighbourhood, with the exception of some servants' houses.

Ventilation.

15. Ventilation good, both natural and by roof outlets.

Over-crowding.

16. There has been no over-crowding. Provision has been made for extra sickness.

The accommodation is ample. The hospital is built for the occupation of 35 patients, giving a cubic space to each man of 1,659 cubic feet.

Accommodation and Defects.

17. There is no cook-room to the hospital, and I think one should be given; it is during the monsoon that a cook-room is absolutely necessary to the comfort of the sick.

There are two contingent wards for the treatment of contagious disease and emergent cases; they are very comfortable buildings, capable of holding 8 patients each.

On the whole the hospital accommodation is ample, and most satisfactory in every way, with the one exception of the want of a cook-room.

Conservancy.

18. The latrines are of permanent masonry. Dry earth is not used; the soil here I should not consider a good disinfectant, owing to the abundance of silica. McDougall's disinfectant powder is used, and the excreta removed by the sweeper and by the night-cart.

Hospital Water-supply.

19. Water good and sufficient from wells in the hospital compound.

Sickness, Mortality, and Invaliding.

20. The average strength of the regiment for the year has been 620.

Total admissions in hospital	1,028
Total treated „	1,051
Deaths during the year	4
Invalided	30
Treated to strength	169·51
Deaths „	0·64
Do. to treated	0·38

The greatest number of admissions have been from ague, altogether, including re-admissions, 534; this disease has been very prevalent and its complications with chest affections, some of them very severe in their nature. Two very severe cases were admitted of this nature, one of double pneumonia, the other of acute capillary bronchitis; both these cases occurred in recruits who had suffered from fever in the lines for several days before admission, but they very rapidly got well under treatment. Enlargement of the spleen is a very common sequela of ague at this station. I have found the biniodide of mercury ointment, with bromide of potassium and chloride of ammonium internally, with saline ferruginous aperients every other morning, rapidly reduce very large ague cases. As might be supposed from the great vicissitudes of temperature, rheumatism has been very prevalent. Eighty-six admissions from this disease are recorded, but all of a mild nature. Sixty cases have been admitted, but none of a severe nature; no loss of eye-sight has occurred in any one case. Disease of the chest has been very prevalent; some were complications of ague, others arising idiopathically.

Bronchitis gives	42	admissions.
Asthma.....	5	„
Pneumonia ...	3	„
Pleurisy	6	„
Hœmoptysis...	1	„

Some of these cases were very severe in their nature. Nine of these men were sent away for change, many of them with the seeds of phthisis sown in their constitutions. The peculiar enervating nature of the climate here, the great vicissitudes of temperature which so suddenly occur, and the irritating effects of dust-storms, combine to render this station exceedingly prejudicial to diseases of the chest. These have been principally what is commonly called shoe-bites, the effect of badly-fitting or probably the wearing of new boots. Sepoys do not wear socks, and it is, therefore, not to be wondered at. The subject has so often been dilated upon that any remarks from me would be superfluous. There have been 39 admissions altogether from contusions. There have been 23 admissions from this disorder, some of them degenerating into foul, unhealthy ulcers most difficult to heal, and incapacitating men from duty for months. This is, however, peculiar to Guzerat, the climate not being conducive to improve the constitution, but the very reverse, both of European and Native, as a rule. There have been 9 cases of dysentery and 15 of diarrhœa. These cases have been, for the most part, of a mild nature. One severe case of dysentery only occurred, which was sent away for change. Only 6 cases of hepatitis admitted; none of, at all, a serious nature. There have been 10 cases admitted into hospital, but a great many more were under treatment in the lines when I first joined. Periodical inspections of the regiment had been going on, but the cases were soon got under by telling the men to eat plentifully of vegetables, of which Deesa market affords an abundant supply. There have been 7 admissions: 3 have died, 1 invalided, 1 sent on sick certificate, 1 discharged for duty, and 1 remaining. The one discharged for duty is going away on furlough. There has been remarkably little of this disease, only 5 cases having been admitted, of which 1 was a re-admission: so that, really, 4 cases only have been under treatment. These cases require no comment, being all of the mildest description.

Mortality.

Four deaths have occurred, 1 from remittent fever and 3 from phthisis pulmonalis. The cases of remittent fever died in February soon after the arrival of the regiment here. The cases of phthisis in February, May, and June.

Invaliding.

Thirty men were sent before the committee, and all were invalided. One case of insanity was sent to the Lunatic Asylum at Ahmedabad. On the subject of invaliding I should most strongly suggest that, if the Native Army is to be reorganized in any way, that some method be adopted to do away with the present system, which affords every facility for malingerers to ply their office, which tends to swell the pension lists, and which is a constant source of annoyance to Commanding Officers and Medical Officers. I cannot help thinking that the pay of the sepoy should be increased; that the period for first pension should be prolonged up to 20 years; up to 20 years the system of gratuities should be in vogue; and that a system should be established whereby a man who remains in hospital over one month should have his pay cut, over two months a further reduction of pay should be made, until he finally comes down to half-pay. It is well known, when once a sepoy has made up his mind to take his pension, there is no more work to be got out of him. The Medical Officer can always fix upon the man he thinks a malingerer, but it is difficult to prove, and he naturally shrinks from the responsibility of bringing a case before a court-martial.

Principal Causes of Sickness.

21. To malaria and vicissitude of temperature may be attributed most of the diseases that occur at this station; they are causes over which we have but little control, especially with natives, who are for the most part thinly clad, and are peculiarly liable to night chills.

Principal Causes of Mortality.

22. The number of deaths having been so small, I have no other than natural causes to assign for the mortality in this regiment.

Mortality according to Race.

23. I have appended to this report a form showing the information required on this subject.

Influence of Rain-fall.

24. I have appended to this report a form showing the rain-fall during the months of July and August, with the admissions from fever. I think it will show unmistakeably the marked influence of the first heavy fall of rain in causing the extrication of malaria from the soil, and, consequently, the admissions from ague. It will also show how, after a subsequent very heavy fall of rain, viz., 10½ inches in twenty-four hours in August, the admissions from ague gradually decreased. A very marked instance of the influence of rain-fall on the production of ague occurred to me in practice out of the hospital. At the time the first heavy fall of rain took place here, viz., of 3½ inches in a few hours on the 18th of July, two ladies at this station were sitting together in the same bungalow; one was suffering from phthisis, the other was in fair health. Both these ladies had a paroxysm of ague before 10 P.M. that same night. The invalid had never had ague before, and subsequently had only two very slight attacks; the other lady suffered from ague during the whole of the rainy season, and had to leave for England in September with enlargement of the liver and spleen. I give these cases, of which the history is clear; they may, perhaps, help to elucidate this vexed question of malaria, which seems to cause a great difference of opinion amongst the profession. There was no sudden chill here, the temperature at the time was hot, close, and muggy, and neither of these ladies were exposed to the rain so as to get wet. Vicissitude of temperature will not hold good as an exciting cause in these cases; and when we consider the marked immunity of phthisical patients from contracting other diseases, the malarial poison must have been very concentrated and powerful.

Epidemics.

25. There has been no epidemic disease at this station during the year, and I have not heard of any case of cholera having occurred.

Vaccination and Re-vaccination.

26. Vaccination and re-vaccination have been steadily and effectually carried out.

General Health and Physique of the Men.

27. The general health of the men of this regiment is fair. It is a fine regiment, composed principally of young men. This is not a good station for natives, but there is but little work of a trying nature to be done, and so, on the whole, they will, I think, do well here. The regiment has suffered much from ague at Rájkot and again at Deesa. The debilitating effects of ague are well known; and if it is considered advisable to preserve so fine a regiment in good health, and fit for any service, I would strongly recommend that, when relieved here, they be sent to some healthy station in the Deccan or Southern Mahratta Country. The regiment has now been about ten years in Cutch and Guzerat, including Abyssinia; they built lines at Rájkot, and have had very trying duties to perform in various ways. I fear that, unless some consideration is shown them in the next reliefs, the health of the men will give way.

Treatment of Disease when special.

28. I have nothing particular to record on this subject.

Special Observations.

29. Neither have I any further special observations to make on diseases, or their treatment, or their causes.

Resumé of the whole.

30. On the whole the year 1874 has been a healthy one at Deesa; Deesa has, I fear, lost its character as a very healthy station. When I was here in 1857 it was considered one of the healthiest stations in the whole of India; it can no longer be considered so; it is difficult to account for this further than the well-known fact, that the longer a place is inhabited the more unhealthy does it become, notwithstanding the most stringent sanitary precautions.

Medical Pupils.

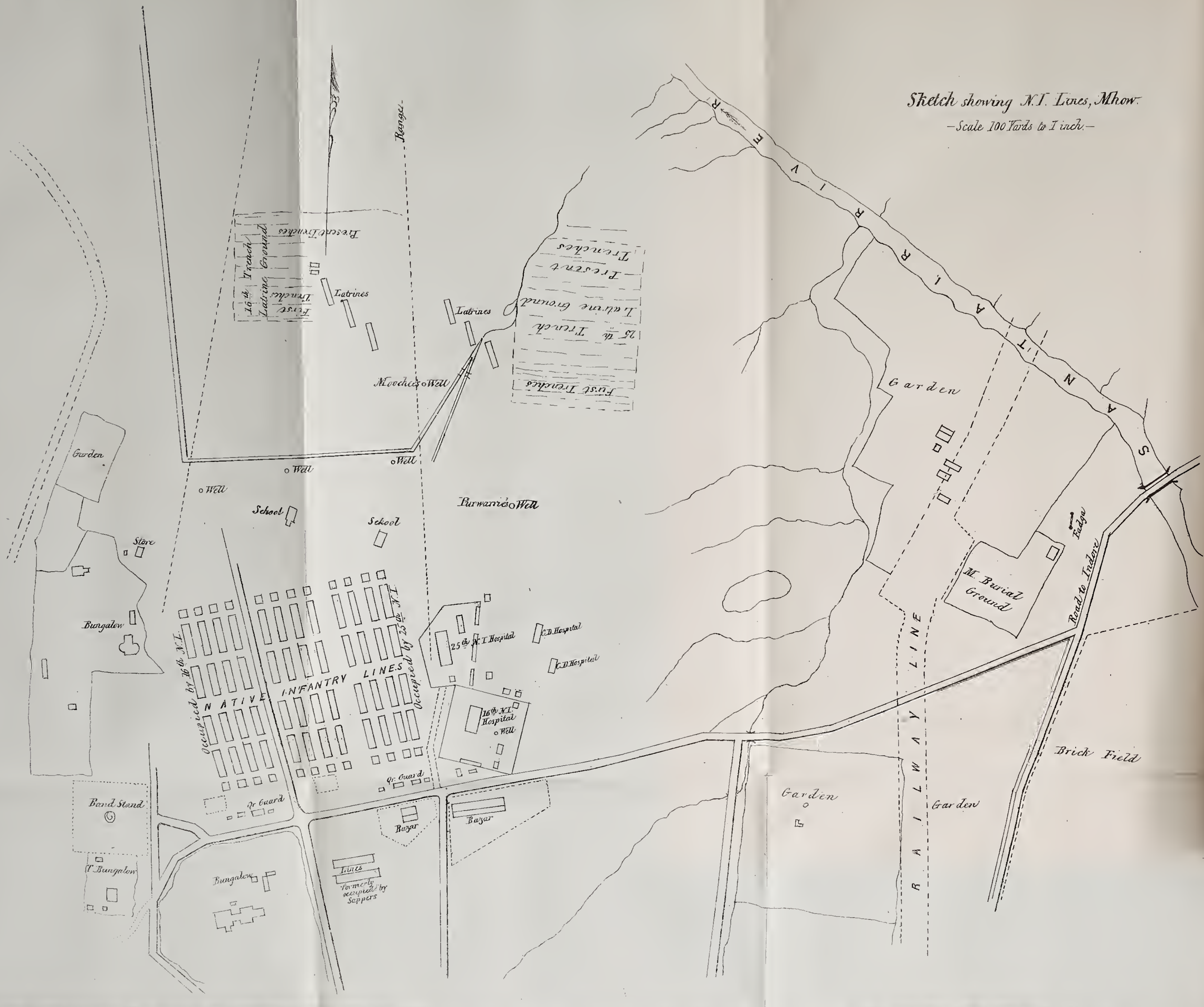
31. There has been only one medical pupil attached to this hospital; I have looked after his education, as far as lay in my power, on an average about twice a week I have had him to my house, and examined him in English and arithmetic, and taught him materia medica, the symptoms and treatment of common disease, and anatomy,—in fact, all subjects that he is supposed to study, and to be examined upon.

Table showing the Fall of Rain during the months of July and August 1874, *with the Proportion of Admissions from Ague each day.*

July.				August.			
Date.	Rain-fall.		Admissions from Ague.	Date.	Rain-fall.		Admissions from Ague.
	Inches.	Cents.			Inches.	Cents.	
1	...	...	...	1	...	37	5
2	...	8	1	2	...	11	1
3	...	...	2	3	1	52	3
4	...	...	3	4	1	74	1
5	...	...	...	5	10	50	...
6	...	...	2	6	...	65	...
7	...	...	2	7	...	41	1
8	...	...	3	8	...	13	3
9	...	...	1	9	...	2	1
10	...	...	2	10	...	...	2
11	...	...	3	11	...	...	...
12	...	5	...	12	...	...	5
13	...	9	6	13	...	...	2
14	...	5	1	14	...	...	1
15	...	...	...	15	...	9	...
16	...	60	...	16	...	2	...
17	...	...	1	17	...	...	1
18	3	36	4	18	...	...	...
19	1	...	2	19	...	...	...
20	...	2	2	20	...	...	2
21	...	...	4	21	...	2	2
22	...	4	1	22	...	4	2
23	...	...	3	23	...	...	1
24	...	3	9	24	...	...	...
25	...	...	2	25	...	...	1
26	...	...	1	26	...	...	...
27	2	38	8	27	...	...	...
28	...	26	6	28	...	...	...
29	...	3	6	29	...	...	2
30	...	9	3	30	...	87	1
31	...	18	5	31	...	...	...
	8	46	83		16	89	37

Sketch showing N.I. Lines, Mhow.

—Scale 100 Yards to 1 inch.—



H. M.'s 25th Regiment N.L.I.

MHOW.—In medical charge of Surgeon HEFFERNAN ; Strength, 472.

Location and Movements of Corps.

1. H. M.'s 25th Regiment N.L.I. was stationed at Mehidpur and Augur during the first two months of the year, and at Mhow and Indor for the other ten. The head-quarters and left half battalion marched out of Mehidpur on the 6th March and arrived at Mhow on the 13th of that month. The right half battalion left Augur on the 6th, and arrived at Mhow on the 17th March. The left wing was again detached, and marched for Indor on the 1st August, where it has been stationed since. These movements were carried out in the usual way, and nothing worth noting occurred.

Detachments.

2. The regiment had no detachments out, except the wing at Augur in January and February, and that at Indor from the 1st August to the end of the year.

Topography and Physical Geography.

3. The topography and physical geography of Mhow have, I presume, been several times fully and accurately described, and I need now only notice some of the chief features of the cantonment and its vicinity. The barracks and public buildings stretch for nearly three miles along the crests and south-western slopes of low ranges of hills, which run chiefly south-east and north-west. The soil in camp is gravelly, disintegrated trap, the sub-soil strong moorum, beneath which, and in some places projecting through it, are large masses of rock of the basalt variety of trap. The rock contains a considerable quantity of iron, and, where exposed to the atmosphere in minute particles, it forms a yellowish red clay, which derives its colour from the oxide of that metal. The surrounding country is bleak and undulating and, unless on the ridges and their slopes, black cotton soil. The station is said to be about 2,000 feet above the level of the sea, and is only a few miles from the crest of the Ghâts. On the east and south the ridges rise into considerable hills, which terminate in the Vindya range, and form the southern boundary of the high table-land of Central India. Owing to the undulating character of the cantonment and the nature of the soil, the rain-fall is carried off at once into two nallahs which drain the place, and the result is a dry and healthy station. There is no drainage required, except a few culverts where the roads cross the natural surface water-courses. The nallahs above mentioned after leaving the cantonment flow northward to the Chumbal and finally into the Ganges. The country to the south-east of the cantonment is drained by a nallah, which flows southward through the Ghâts into the Nerbudda. These nallahs are the only streams or surface water of any description in the immediate vicinity of camp, and they generally run dry, or nearly so, in the hot season when they are most required.

Effects on Climate.

4. Mhow being situated on the water-shed of the Gumbeer and Satair rivers, only a few miles from the crest of the Ghâts, and 2,000 feet above the level of the sea, with a well-drained surrounding country and a fair average rain-fall, the climate must be good, and all other things being favourable the station is a healthy one. During the year under review the climate was good, and when compared with that of other Indian stations very pleasant. The mean of maximum temperature was 89·1, the mean of minimum 65·7, and the mean of the year 77·4.

The rain-fall of the year was abundant, and amounted to 42 inches and 76 cents.

Lines—available Space.

5. The Native Infantry lines are situated in a fair position at the north end of the cantonment, and are supposed to accommodate only a battalion and a half; but as one of the two regiments always stationed here has a wing detached to Indor the barrack-room space is ample. They are built without plinths, on soil which is here black and retentive of moisture, and as a consequence they are damp in the rains, and the streets muddy. They are built in blocks on the top of a slight ridge, from which there is a fall and natural drainage on all sides ; but the nature of the soil, as before stated, causes it to retain a certain amount of moisture. Wide streets intersect the lines at right angles, dividing them into blocks of four pendalls each, which are again subdivided by smaller streets, allowing a free circulation of air.

The average cubic space available in the 25th Regiment, independent of verandahs, for privates amounted to about 1,080 cubic feet and the superficial area to about 94 square feet; for non-commissioned officers about 1,230 cubic feet and 120 square feet, and for native officers about 4,001 cubic feet and 585 square feet. There are no means of ventilation, except through the door and roof. The huts are single-tiled, of sun-dried bricks, and are in good order ; but *pucka*-built barracks on raised plinths, with metalled streets, would improve the condition of the sepoy both morally and physically. I give the cubic space of the sepoys' huts, from an average of 33 houses measured by myself, in different parts of the lines Some are a little larger than others, but I believe they were originally designed to be all 10 feet square.

The regimental bazaar consists of a few houses on one side of the public road at the south-east corner of the lines, and it is generally clean and in a good sanitary state. There are two butchers' shops, where mutton of a fair quality is sold; but most of their other supplies are obtained from the Sudder Bazaar.

There are no villages very close, but at a little distance several new ones are springing up. One village (Khishenpura), outside cantonment limits on the Indor road, deserves special notice. It is situated on the north bank of the Satair nallah, and is always in a filthy condition. The worst characters amongst the sepoys resort to it to drink and smoke ganja and opium. Any crime committed in the regiment is generally traced to this hot-bed of depravity. The place is increasing in size, and will, unless steps are taken to prevent it, become in time a source of danger to the health of Mhow.

The drainage is all surface, and, with the exception of a small quantity of the rain-fall retained by the surface soil, it flows off very quickly.

The depth of the sub-soil water varies considerably according to the season, as in the hot weather it is over 50 feet from the surface in the lines, whilst during and immediately after the rains it is comparatively near, being not more than about half of this distance. The sub-soil water in the lines is, however, at all times sufficiently far from the surface as to cause neither dampness nor other inconvenience.

There are no particular arrangements for the disposal of sewage; but the refuse water from many of the houses is utilized by pouring it over the roots of some young trees lately planted in the lines. There are no tanks in the vicinity.

Conservancy and Sanitary Arrangements.

6. The trench system of latrines is in force here for native troops, except in the wet season, when the old permanent ones are resorted to. This fact alone proves that they do not suit the place; for, if they do, why not use them all the year round? The trenches were first opened three years ago, and Surgeon-Major Murray reported them at the time as likely, owing to their position, to contaminate the wells from which the sepoys drew their drinking water. This year a case of enteric fever occurred, and the patient, who is a Purwarree, obtained his water-supply from one of these wells. The water was analyzed, and said to contain a larger quantity of organic matter and chlorine than it ought to, which denoted contamination by sewage. I conclude from these facts that the water in the well was contaminated from the latrine, and, had not the latter been moved back some distance, a still greater contamination would have occurred, and, perhaps, an outbreak of typhoid fever. The trenches were moved back during the year under review, which renders them less likely to contaminate the wells, but brings them quite close to the Satair nallah.

I have watched the working of this system, both at Mehidpur and Mhow, during the last three years, and have no hesitation in stating that it does not suit either place.

Water-supply.

7. The water-supply is derived from wells, and is usually insufficient during the hot months. As Surgeon Kiernander, of the 16th Regiment N.I., has analyzed all the wells used by the native troops, and will give the result in his report, it is needless for me to say anything regarding the quality of the water. I may, however, mention two probable sources of impurity, which are—the nearness of the latrines, and in the rains some of the surface drainage from the lines flows close to one of the wells. So large and important a cantonment as Mhow should not depend on the present wells for its water-supply in the hot months. The country all round is undulating with hills in the vicinity, and every facility for the storage of water exists.

A good tank close to the cantonment, so as to supply plenty of pure water, would make Mhow perhaps one of the best stations on this side of India. At present the great faults of the place are its bleakness and scarcity of water.

Food.

8. With perhaps the exception of vegetables, the several articles which comprise the diet of the sepoy are obtainable at Mhow in abundance and of good quality, at moderately cheap rates. It does not necessarily follow, as a consequence of this, that the native troops here are well fed; on the contrary, I have no doubt that many of the men take an insufficient quantity and an inferior description of food. When the parsimonious habits of the sepoy and the number of relatives he has very often living on him, and the smallness of his pay, after deducting all stoppages, are taken into consideration, it will be easy to understand how insufficient his food is, and how little fit he himself must be to undergo much bodily fatigue.

Clothing.

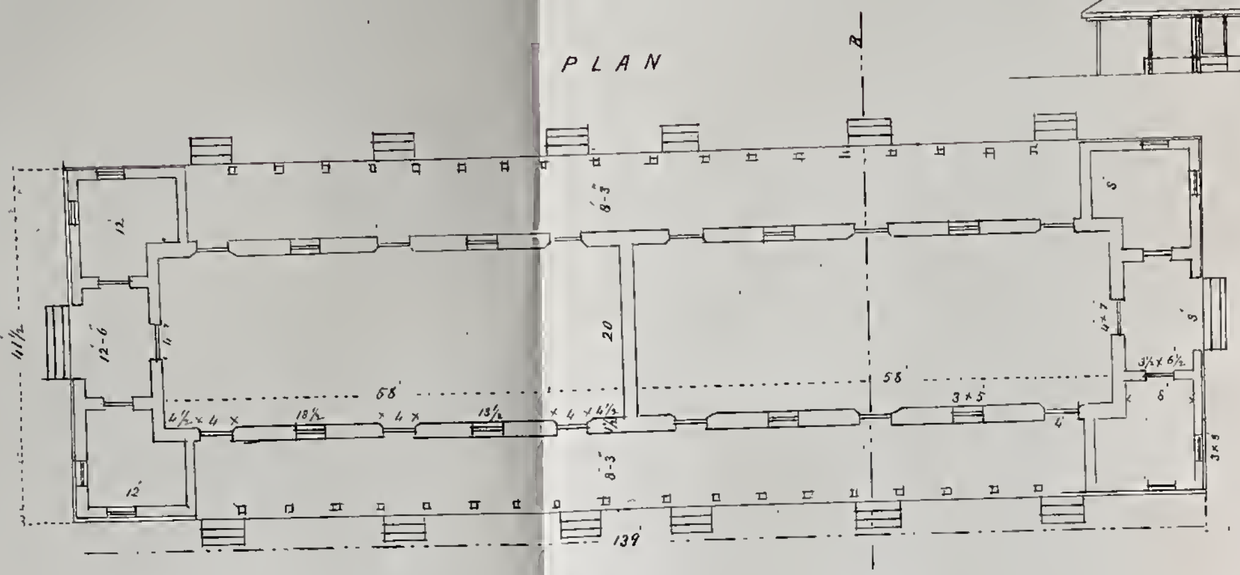
9. The subject of clothing is one very difficult of solution, and on which I have found a difference of opinion amongst officers with great experience from long association with native troops.

each 24 feet long by 14 feet wide and 14 feet high to the beam, which gives a superficial area of 472 square feet, and a cubic space of 6,608 cubic feet for contagious diseases.

PLAN FOR N. I. HOSPITAL
and
CONTAGIOUS DISEASE WARD,

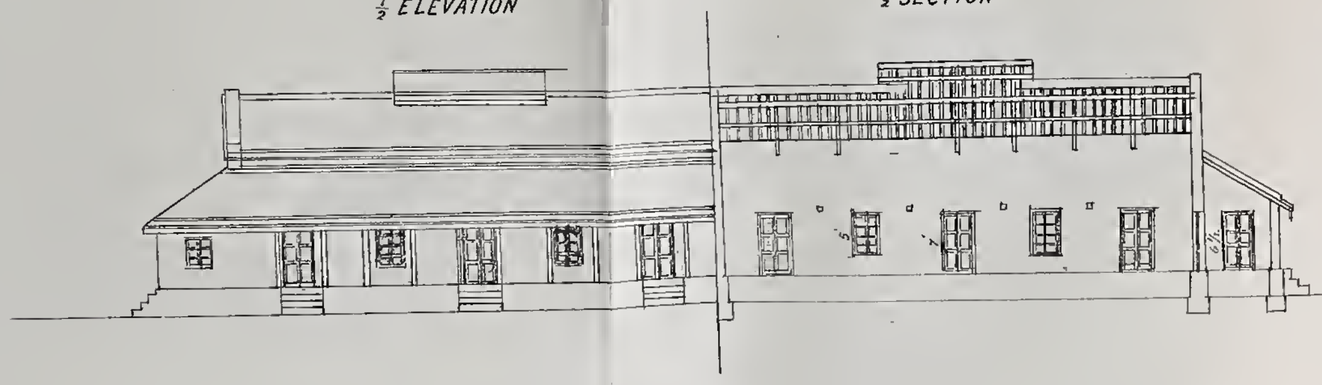
MHOW

PLAN

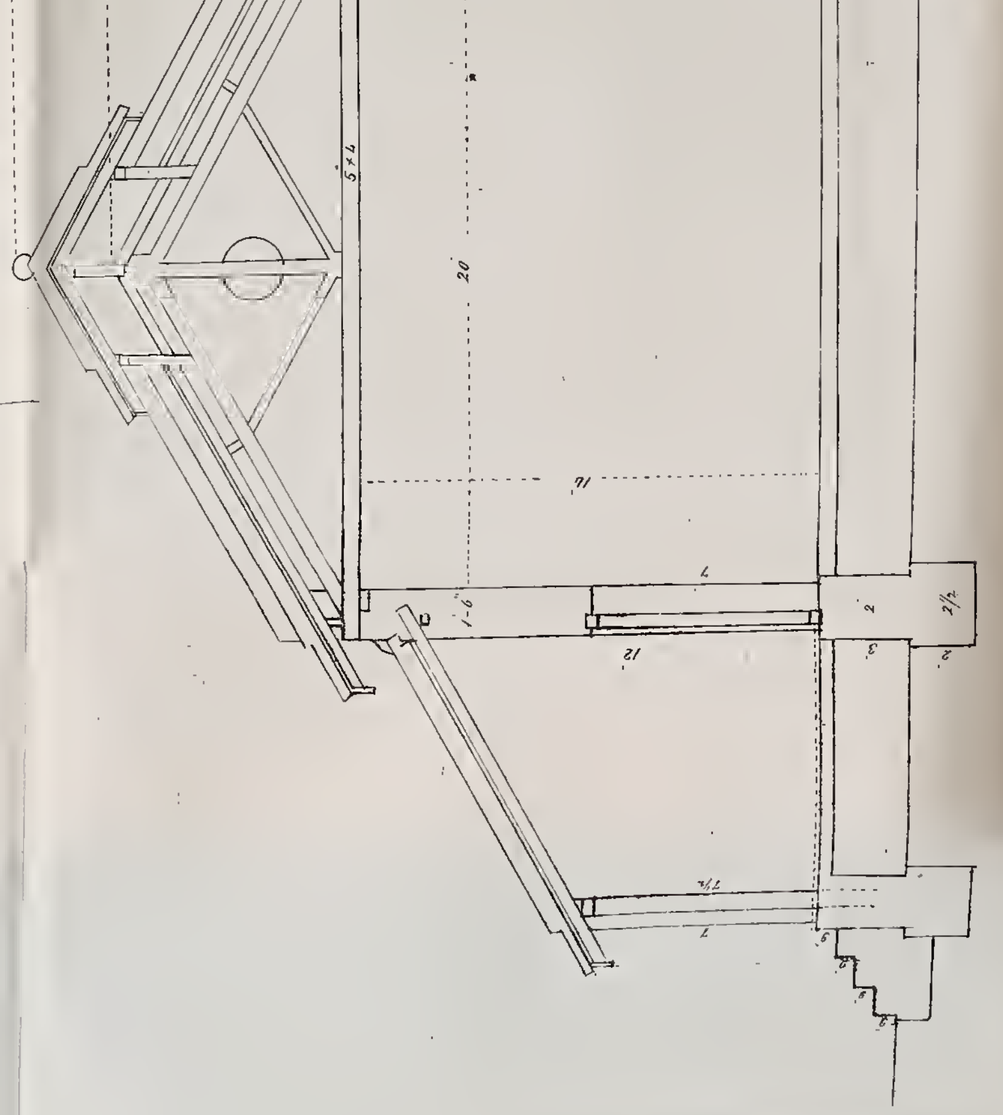


½ ELEVATION

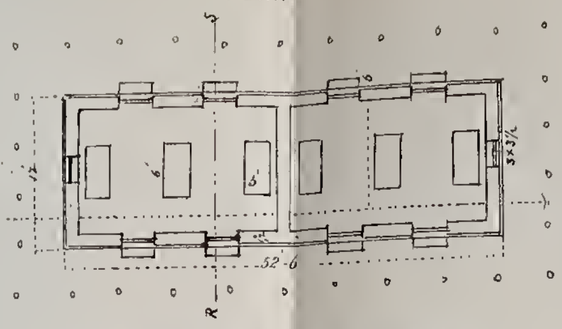
½ SECTION



SECTION ON A.B.

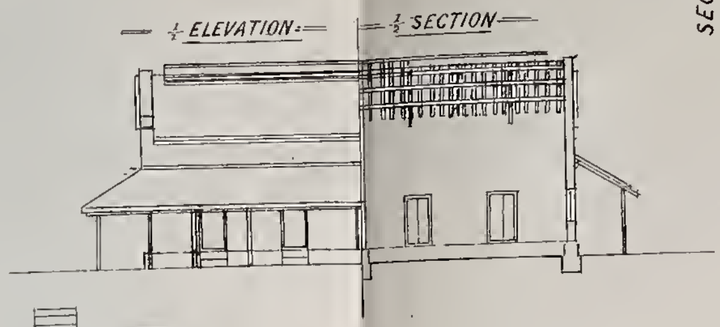


PLAN



½ ELEVATION

½ SECTION



SECTION ON R.S.

Scale for Plans & Elevations 20 feet to an Inch

10 5 0 10 20 30 40 50 60 70 80 90 100 110

Scale for Sections 5 feet to an Inch

Inches 0 6 12 1 2 3 4 5 6 7 8 9 19 29 ft

The boot is, of course, the most important article of dress, and I must say that my experience is in favour of the English-made one. I have no doubt that half the admissions into hospital from shoe-bites would not occur if the men were compelled to keep their boots soft, and in proper condition, and were punished for not doing so. In the 25th Regiment, a short time since, shoe-bites were rather common, so much so that the Commanding Officer thought it necessary to take special notice of, and steps to prevent them. The men were provided with oil to keep their boots soft, and warned that any man who in future presented himself at the hospital with a shoe-bite, due to his own neglect in not having looked after these properly, would be punished. The result was a total disappearance of shoe-bites from hospital. I think the above fact proves that shoe-bites are in a great measure due to carelessness in the manner of wearing and looking after the boot. I have noticed that regimental followers and officers' servants are very fond of the English ammunition-boot, and will always wear it on the line of march when procurable.

With regard to the other articles of dress, I think the red tunic is by no means a good coat for the sopoy. A loose khakee or grey coloured coat of serviceable material, with pantaloons to match and a puggree, would perhaps be better. I would recommend the adoption of a light undress for sepoys when off duty, and strictly prohibit their slouching about bazaar, as they do now, in any dress that pleases them. I would try and make them proud of being soldiers, and have them at all times dressed differently from the civil population. A neat dress and good barrack quarters would, in my opinion, tend to elevate the native soldier both morally and physically.

Duties and their Effects on Health.

10. The duties in the 25th Regiment during the year were quite sufficient to keep the men constantly employed, but not so severe as to exercise any unfavourable influence on their general health.

Exercise, Amusement, and Occupation.

11. From what has been stated under the heading of "duties" it will be seen that the men had sufficient occupation and exercise in performing these without any extra work. Since the introduction of musketry, with its judging distance and aiming drill parades, both the sepoys and their officers have as much work as I should think they require; at least such is the case in the regiment in my charge. The recruits and some sepoys go to school from 10 o'clock A. M. until 12 (noon), and again from 7 until 9 P.M.

Some of the men play cricket when they have any spare time to do so, and others amuse themselves with games at cards and chess in the lines. A horizontal bar and other implements for gymnastic exercises are much needed.

Lock-up Rooms and Cells.

12. There are no lock-up rooms amongst the regimental buildings. The cells are two in number, 10 feet square by 12 high, which gives a cubic space of 1,200 cubic feet in each. They are well built, dry, and thoroughly ventilated.

Marches.

13. The head-quarters and right half battalion marched from Mehidpur to Mhow, and the left wing from Augnr to Mhow, and from the latter station to Indore, during the year. As before stated, these movements were performed without anything unusual having occurred.

Hospital and its Surroundings.

14. A new hospital for native troops was opened on a good site, about 60 yards to the east of the lines, and handed over to the 25th Regiment during the year. This institution was urgently needed, as the old hospital was far from sufficient for the requirements of two regiments. It consists of one long building, running directly north and south, about 138 feet in length by 41 feet wide, including the verandahs. This space contains the two principal wards, which are end on to each other, and four small compartments, one at each corner, which are used for the office, dispensary, store, and bath rooms. The chief wards are each 58 feet long by 20 feet wide and 14 feet high to the beam, giving a superficial area of 1,160 square feet, and a cubic space measured to the beam of 16,200 cubic feet. Each ward is capable of affording to twenty patients a superficial area of 58 square feet and, a cubic space, measured to the beam only, of 812 cubic feet per man. The floors and verandahs are raised three feet above the surrounding compound, and are composed, the former of chunam, and the latter of stone. The subsidiary buildings are all new, of a good description, and, with the exception of the dead-house, complete in every way. The soil in the vicinity is well drained, and the whole neighbourhood healthy.

There is a detached building about two hundred yards to the east, containing two wards, each 24 feet long by 14 feet wide and 14 feet high to the beam, which gives a superficial area of 472 square feet, and a cubic space of 6,608 cubic feet for contagious diseases.

Ventilation.

15. The hospital and contagious wards are thoroughly ventilated by opposite doors and windows, by openings in the walls, and by a large space at the top, which is covered by a fly-roof. Each large ward has seven doors, 7 feet by 4, three in front and three in rear, and one at the end ; and four windows, 5 feet by 3, two in front and two in rear, and placed between the doors. In addition to these as above mentioned, there are two sets of opposite openings in the walls, sixteen in number—eight about 6 inches square, placed immediately above the doors, and eight about 3 inches square, higher up near the roof. The opening at the top, which is protected by a fly-roof, is over 14 feet long. There is also at each end, high up, a space equivalent to the size of four bricks.

Over-crowding.

16. There has been no over-crowding since the new hospital was opened. The average daily number of sick has been 30·04, and the space at their disposal 32,480 cubic feet, or about 1,000 cubic feet per patient, without calculating roof space or isolation wards.

Accommodation and Defects.

17. The hospital accommodation is very good and, on the whole, ample. There are a few defects, which, however, do not cause much inconvenience, as the building is sufficiently large to prevent over-crowding. An ophthalmic ward for about four patients is required, and, until this want is supplied, the place must be called defective in that respect. It would have been better, perhaps, to divide the building into a large ward for ordinary cases, and a small one for those requiring a certain amount of isolation, than into two of equal size, as has been done Many cases which it would not be necessary or prudent to remove to the contagious wards require a separate room for their proper treatment.

Amongst the subsidiary buildings the dead-house must be reported as totally devoid of all the appliances required in *post-mortem* investigations. I brought this to the notice of the proper authorities, and stated that the examination now required in deaths from cholera could not be carried out without suitable fittings, but received a reply to the effect that it was in accordance with the regulation, and the following extract from Government of India Circular No. 19 of 1866, was quoted :—" As it is not customary to carry out *post-mortem* examinations in native hospitals, a simple enclosed shed, 12 feet square, will answer as a dead-house." If the *post-mortem* examinations are really required, according to the form given in the cholera register, a change in the style of building, now called a dead-house, is urgently needed.

Conservancy.

18. The hospital latrine is supplied with the ordinary dammered iron privy pans, which are placed in openings in a cut-stone seat. These are removed through a passage at the rear of the building and emptied into a receptacle, from which the contents are carted away every morning. A large amount of the fluids do not fall into the pans, but flow backwards through the openings, and are either evaporated or sink into the ground in the rear. I brought the matter to notice, and an attempt was made to remedy the evil by fitting the pans better, but without any apparent benefit, and the subject is again under consideration.

Hospital Water-supply.

19. There is no particular well allotted to the new hospital,and the water-supply is derived from the one in the old or 16th Regiment hospital compound and from a new one which was last year opened between the lines and officers' bungalows, and also from the regimental ones. The quantity was sufficient, and the quality fair during the year under review.

Sickness, Mortality, and Invaliding.

20. The average strength of the regiment at head-quarters during the year amounted to 472, the total number of admissions into hospital to 906, the daily average of sick to 30·04, the proportion of sick to strength per cent. to 6·36, the proportion of admissions to strength per cent. 191·94, the percentage of treated to strength to 199·57, the percentage of deaths to strength to 0·63, and the deaths to treated to 0·31. The above percentages contrast favourably with those for the previous year, as the following table shows:—

Year.	Strength	Admissions into Hospital.	Sick to Strength per cent.	Average Daily Sick.	Admission to Strength per Cent.	Treated to Strength per Cent.	Deaths to Strength per cent.	Deaths to Treated per cent.
1873	337	1,435	1·314	44·29	425·81	430·26	0·59	0·13
1874	472	906	6·36	30·04	191·94	199·57	0·63	0·31

Fevers.

Although the number of admissions from these diseases will appear very small when compared with that for the previous year, they still hold the first place amongst the men. Ague contributed 396 to the total number of admissions into hospital, which seems a high figure; but, when contrasted with 719 for 1873, it shows a great improvement, particularly as the strength was about one-third more this year. The total number of ague cases treated amounted to 417, of which 21 remained over from last year, and 396 were admitted; and of these 406 where discharged to duty, 10 sent on sick leave, and one was under treatment on the 31st December.

The disease was most prevalent in April, when 61 cases, almost all of a serious character and complicated with bronchial affections, were treated. I mentioned in my remarks on the return of sick for that month, that the men admitted were those who had previously suffered severely from intermittent fever at Mehidpur, and whose systems were saturated with malaria. From April until December the monthly admissions from ague were always over 30, but never reached 40. I attributed most of these admissions to rapid changes of temperature acting upon systems already impregnated with ague poison, and in no way due to the climate of Mhow. In none of the cases were the several stages so well marked as at Mehidpur last year; but the complications which occurred in the lungs, liver, and spleen rendered the disease formidable and difficult of cure. In fact, most of the men pensioned, were invalided for diseases which supervened on malarial cachexy.

Chronic Bronchitis

Of a very intractable nature I have found a frequent sequence of malarial blood-poisoning. How any man can consider malaria "a fiction," I am at a loss to understand, when these lesions and degenerations of a specific character can be distinctly traced to a fever contracted at a certain station which for years has had the reputation of being malarious. I have had a great many cases of ague in my regiment during the past six years, and am fully convinced that nothing but a specific poison could cause the same class of secondary lesions in all cases where the disease regularly took hold of the system.

The men of the regiment who served at Hadoda in Abyssinia contracted an ague of which they could not be cured, but had to be pensioned. Was this fever due to nothing more than "rapid atmospheric changes," or was it due to a local poison? I most decidedly say to the latter, call it by what name you will.

Enteric Fever.

A case of enteric fever occurred in September which ran a typical course, and allowed a clear diagnosis to be fully established. There could be no mistake about the type of the fever, as the temperature chart, carefully kept by myself, shows a range typical of typhoid fever, and of that disease only. The man was of the Purwarree caste, and obtained his drinking water from a well formerly reported by Surgeon-Major Murray as dangerously close to the trench latrines.

Remittent Fever.

One case of remittent fever only was registered.

Simple Continued Fever.

Simple continued fever contributed 83 cases of admission but the disease presented nothing worth recording.

Small-pox.

There was a slight outbreak of small-pox soon after our arrival at Mhow: 8 sepoys and 5 children were admitted. One case proved fatal, and the child, although stated to have been previously vaccinated, showed only very doubtful marks. I believe the disease was contracted in the lines, and would have spread, were not the men all protected. I am led to believe that the small-pox previously existed in the lines for the following reasons. The 10th Regiment N. L. I. had a slight attack in the same lines; and at the time the 25th Regiment arrived, two men of the 16th Native Infantry were under treatment in a tent for what was registered as chicken-pox. But as small-pox shortly afterwards showed itself in that regiment also, I am inclined to think those cases may have been a modified form of the disease.

There was every accommodation to treat the disease in an isolated position, and the protective powers of vaccination were shown by the smallness of the number of cases which occurred, and its modifying influence by the fact, that the only case which proved fatal was in all probability unprotected.

Dengue.

Eight cases of dengue remained over from last year, and in all of these the rheumatic symptoms had assumed a chronic character.

Diseases of the Respiratory System.—Bronchitis.

This disease caused 65 admissions into hospital, and many of these cases were of a very chronic and intractable type. The worst subjects for treatment were those with well-marked malarial cachexy. During October, 19 cases were treated, chiefly in men whose systems were in an anæmic condition from malarial blood-poisoning. Chronic bronchitis is very often a sequence of malarial fevers, and a permanent result from exposure to malaria.

Pneumonia. Two cases of pneumonia were registered, and in both it supervened on other diseases, and proved fatal.

Diseases of the Digestive Sytem —Dysentery. Seventeen cases of dysentery were treated with the usual remedies—ipecacuanha and astringents, and all were discharged to duty cured.

Diarrhœa and Colic. Twenty-four cases of colic and six of diarrhœa were admitted.

The remaining admissions under this heading were—1 of gastritis, 6 of dyspepsia, 6 of splenitis, 1 of fistula in ano, 4 of hœmorrhoids, 2 of abscess near the rectum, and 1 of caries of the teeth.

Rheumatism. Chronic rheumatism furnished 29 admissions into hospital and of these the greater number were very doubtful cases. Although the galvanic battery was efficacious with some of the sufferers, other cases resisted all treatment, and the men had to be pensioned. Two young men remained under treatment at the close of the year. One of these had very bad dengue last year, and since then he has been subject to rheumatic pains in his joints, and is very much broken down.

Muscular rheumatism contributed 13 cases of admission; and it is almost needless to remark that the sufferers from lumbago were men over fifteen years' service who wished for pension. Nothing pleases these men better than a blister over the loins, for they can always show the mark afterwards, and point to it as a proof of rheumatism. A very mild case of acute rheumatism was registered.

Scurvy. Three cases of scurvy were treated. One man who was suffering from scurvy died, but his death was due to a combination of diseases. He had been a long time in hospital with ague at Mehidpur, and when the regiment marched from that station was very ill. I explained his case to Surgeon-Major Murray, 10th Regiment N. L. I., and we considered it unadvisable to leave him behind, thinking his only chance of recovery would be by change of air. He seemed to improve on the march, and for some time after his arrival at Mhow; but scurvy attacked him, and afterwards pneumonia, and he died.

Syphilis. Two cases of primary and 3 of secondary syphilis were treated.

Gonorrhœa and Bubo. Four cases of gonorrhœa and 3 of bubo were admitted, but these presented nothing worthy of notice.

Pericarditis. One case of pericarditis was treated, and the patient when convalescent was granted sick leave.

Diseases of the Eye. Seventeen cases of conjunctivitis, which were of the usual description met with amongst sepoys, were admitted.

There are two admissions for nyctalopia, which were furnished by the same patient, an old man seeking for pension. There are also two admissions from chronic instertitial keratitis furnished by one man. In this case improvement under treatment was very marked, and the man can now go through ball practice at the longest ranges with ease.

Diseases of the Ear. A case of inflammation of both ears, which ended in suppuration and deafness, was treated, and the patient pensioned.

Leprosy. A Mahratta, who had been a long time in hospital with leprosy, was pensioned.

Ulcer. A chronic ulcer case, which resisted all treatment, was also sent before the Invaliding Board, and the man pensioned.

Debility. Seven cases were registered under this heading, and occurred in men worn out from malarial fevers.

Stricture. Five admissions from stricture of the urethra occurred, and the sufferers have since been pensioned. The subjects of these admissions were two men, one of whom suffered from gravel and the other from general debility, and who were unfit for further service.

Guinea-worm. Four cases of guinea-worm were treated, and it was supposed the men contracted the disease whilst on leave in the Konkan.

Skin Diseases. Eleven cases of scabies, 2 of eczema, and 1 of psoriasis were treated.

Contusion of the Lower Extremity. From this cause 101 were admitted into hospital, the contusions were chiefly shoe-bites.

The remaining admissions were from slight causes, which deserve no remark, such as boils, &c.

Mortality.

Considering the amount of sickness which prevailed in the corps during the previous year at Mehidpur, the mortality may be said to be inconsiderable, only three deaths having occurred at head-quarters.

The large number of men invalided, is to be attributed to the great amount of sickness which the regiment has gone through lately, and in only one or two cases were the complaints of anything like a doubtful character.

Invaliding.

Eighty men, including a bheestie, were pensioned, and 3 young soldiers discharged the service.

In most of these cases, debility, bronchitis, and ague, all the effect of malarial blood-poisoning, were the chief causes of unfitness.

Principal Causes of Sickness.

21. The principal cause of sickness from the date of our arrival at Mhow, was the presence of the above-mentioned men with the regiment, as many of them were nearly always in hospital, and also a lot of young sepoys who were great sufferers from ague at Mehidpur, and did not shake off the disease for some time. During the months of November and December, when the broken-down men who were pensioned had left the hospital, the percentage of sick to strength fell to 3·81 in the former and 4·74 in the latter, which is the lowest the regiment has attained for years, as the following table shows :—

	Years.									
	1869.		1870.		1871.		1872.		1873.	
	November.	December.	November.	December.	November.	December.	November.	December.	November.	December.
Proportion of sick to strength per cent. average daily number of sick ...	6·40		8·3	8·8	4·6	4·36	7·15	5·22	26·26	13·26

Principal Causes of Mortality.

22. The chief causes of mortality were pulmonic complications supervening on malarial fevers, scurvy, and syphilis. In both the cases, which terminated fatally in April, the patients had been great sufferers from fever at, and one was removed in a hopeless condition from, Mehidpur. In the other case pneumonia supervened on fever of a remittent type brought on by exposure at Mhow.

Mortality according to Race.

23. The three men who died were all Hindus.

Influence of Rain-fall

24. The rain-fall of the year was above the average, and I have no doubt exercised a considerable influence on the climate. The monsoon set in early, and there was a fall of over 10 inches of rain in June. This rendered the climate very pleasant, and there was none of that excessive heat which is generally experienced in Central India when the rains are late. The crops, country all round, water-supply, climate, and general health were all, of course, benefited by the above state of things.

Epidemics.

25. There were no epidemics, except the slight outbreak of small-pox noticed under the heading of sickness.

Vaccination and Re-vaccination.

26. Vaccination and re-vaccination were carried out carefully during the year, and with the following results. The total number of primary vaccinations amounted to 104, and of these 57 were successful, 40 unsuccessful, and 7 unknown. The large number of unsuccessful operations were due to the time of the year when most of the subjects were vaccinated, in the hot weather, to the chance that some of them were previously protected, and to the quality of the lymph. The unknown cases occurred where children were taken to their countries by the parents before a decided result was obtained. The total number of re-vaccinations amounted to 58, and of these 4 only were successful.

General Health and Physique of the Men.

27. The general health of the men has been vastly improved by the change from Mehidpur, and this will be more apparent in next year's annual reports, as the 80 unfits who were pensioned kept the hospital nearly full from the date of our arrival at Mhow until they were disposed of. The young sepoys of from one to three or four years' service, who joined at Dhulia

and Mehidpur, were the next greatest frequenters of the hospital. Referring to the physique of the regiment, there is no doubt that the men who have joined within the last five years are not of as good a stamp as the old sepoy who enlisted before the mutiny. I look on a great many of them as quite unfit for the life of a soldier, and as having no aptitude or liking for it more than the desire to serve fifteen years for pension. During the year under review there was an improvement in the class of men enlisted, but they did not come up to the standard of what recruits should be. The pay must be increased before we can get a better class of men to select from in the Bombay Presidency. The recruiting pay and pension rules of the Bombay Army all require to be changed so as to suit the age. It is ridiculous to think that a man who enlists at eighteen, and serves the ordinary life of a sepoy for fifteen or sixteen years at some of the best stations in his own country, should be in a state to go before an invaliding board for general debility at the early age of thirty-three or thirty-four.

Treatment of Disease when pecial.

28. There was no special treatment during the year which deserves notice, except, perhaps, I may mention the fact that when a patient in typhoid fever seemed on the point of death, and was delirious with a high temperature, and unable to swallow, the application of pounded ice to the head and spine relieved all these bad symptoms.

Special Observations.

29. I venture to bring to notice, as a special subject, the incongruity of the form given, according to which Medical Officers in charge of native troops are supposed to make *post-mortem* examinations in deaths from cholera, and the style of dead-house allowed by Government.

Resumé of the whole.

30. The most important of the subjects here treated in connection with the efficiency of the sepoy, are his physique on enlistment, his food, and his clothes.

On the first subject I believe most military and medical officers will agree with me when I say that the present obtainable recruit is, as a rule, a weakly lad.

The second-mentioned subject—food—is, indeed, one of paramount importance, but one over which we have little or no control. The sepoy is most decidedly under-fed, and the Konkani Purwarree the worst fed of all.

With regard to the last subject—clothing—I am aware that a great many Medical Officer recommend the sandal instead of the boot. I have thought over, and heard this matter discussed several times by officers who have marched hundreds of miles on field service with native troops, and the evidence is, in my opinion, in favour of the English-made boot. All marching in India is, as a rule, made at night and in the early morning, and for this the sandal would not suit, as it would be no protection to the toes. Any one who has marched with sepoys, knows how they go stumbling along over country roads in the dark, striking their toes against any obstacle that may come in the way in a most reckless manner. Another objection to the sandal, is the facility with which gravel can get in under and between the toes and blister them in it. That all natives are not accustomed to wear the same description of sandal, is an objection also. That the sandal will never take the place of the boot, whatever else may, I have no doubt.

Instruction to Native Medical Pupils.

31. There is but one medical pupil attached to the hospital. Since the drill season commenced, he, being the only available subordinate, has been morning and evening at ball practice, almost every day. This interfered with my giving him instruction at any stated times. Prior to the receipt of the Surgeon-General's circular I generally asked questions at the bed-side on surgery, medicine, and materia medica, as they suggested themselves to me. For writing and arithmetic he has done the office work of the hospital during the last six months. I have instructed him in the rules of spelling and rudimentary anatomy about once a week. Since the receipt of the above-mentioned circular I gave him instructions twice weekly in materia medica, ordinary diseases, English grammar, and spelling.

A tracing plan of the new hospital and a sketch plan of the lines, wells, and latrines are attached.

H. M.'s 16th Regiment N. I.

MHOW.—In medical charge of Surgeon KIERNANDER; Strength, 528.

Location and Movements of Corps.

1. The regiment has been stationed in Mhow since January 23rd, 1872; it came to Mhow from Ahmednagar.

Detachments.

2. The left wing was at Indor from the 16th of February to the 1st of August 1874. A detachment of the regiment returned to head-quarters on the 7th of February from Assirghur, where it had been stationed since 1st of November 1873.

3. The station of Mhow stands on an undulating elevation about 2,000 feet above the level of the sea, its area being 13·5 miles. The highest portion of the camp is the southern end, where the European Infantry lines and quarters are situated; it gradually slopes down towards the northern end (the lowest part of the camp) where the Native Infantry lines are situated.

Topography and Physical Geography.

a.—The soil varies in different parts of camp. In the immediate vicinity of the buildings of the Native Infantry lines it consists of a layer of moorum, while on the outskirts it is chiefly black cotton soil. In the higher parts of the camp the soil is light and gravelly, while in the lower portion it is a rich black soil over a base of *trap rock*.

Soil.

b.—There are no tanks or marshes in or about the camp, all drinking waters being obtained from wells.

Waters.

Two nallahs, the Satair and Gambier, run within easy distance of the Native Infantry lines; these are resorted to in the hot weather by the sepoy when the water in the wells is low. The sub-soil water when at its highest is about 25 feet from the surface. The extreme variation in its rise and fall is about 17 feet.

c.—Is natural, the surface waters soon running off into the two nallahs above named; a portion, however, being retained by the black soil surrounding the Native Infantry lines.

Drainage

4. Is a good one for Europeans; the hot weather, which lasts for little more than two months, is never excessive; the rainy season is delightful, and the cold season is perfection. It is not so, however, for the sepoy, who, from being inadequately clothed and ill fed owing to dearness of provisions in camp, and a habit of living on the cheapest kinds of grain, &c., is subject to congestions of internal organs; bronchitis, diarrhœa, and intermittent fevers being very prevalent in the wet and cold season.

Climate

5. These are the ordinary single-tiled huts, built in sections running north and south with an open space all round. Each section is divided into four blocks, and each block contains from 20 to 24 huts—that is, the two blocks, situated one at each extremity of the section and called the outer blocks, contain 24 huts, while the two inner blocks contain 20 huts in each. The size of the interior of the huts varies, no two huts scarcely giving the same measurements. The original ground-plan shows them to be 10 feet square, but they are now either larger or smaller, as the walls incline from the perpendicular to one side or the other, and according to the thickness of the annnual plastering.

Lines.

The average measurement obtained from a large number of the huts is 9 feet and 10 inches by 9 feet 7 inches. Practically an inch or two, more or less, makes no difference, as the ventilation in the roof makes up for deficiency in size when it exists.

This description applies to the hut of a private; the non-commissioned officer has a arger one by 2 feet in length, and the native commissioned officer has a detached hut 30 eet from the extremity of each section.

c.—The bazaar consists of two huts situated to the north of the lines, where meat of a fair quality and the other necessaries are to be obtained. There are no villages very near the lines.

6. The night-soil in camp is removed in air-tight iron carts to large trenches outside camp limits, and there buried. In the regimental lines the trench latrine system is carried out, except in the wet weather, when the brick-built permanent latrines are used. The trench system, as worked here, is a failure, for the trenches are made too deep, and they are too wide to allow of any one using them with comfort. The following represents the trenches as at present used:—a long trench, 30 feet by 2 feet wide and 1½ feet deep. I would recommend, instead of a long deep trench, that small ones be made, 2 feet long, 10 inches wide, and 6 inches deep, *parallel* to one another, thus:— || || || || || || ||

Conservancy and Sanitary Arrangements.

Any one who will think over the two plans must see, for obvious reasons, that the latter arrangement is preferable for the comfort of those using the latrines, and more so on sanitary grounds, for under the present arrangement the ground over the trenches is ploughed yearly, and I have seen no Indian plough that affects the grounds over which it is worked for more than eight inches: so that we are contentedly working, year after year, fancying we are doing

all that is necessary for rendering harmless, and perfectly mixing with earth, the entrenched excreta, when we are really leaving vast cesspools at the bottom of the trenches, laying up for ourselves troubles for a future and no distant date. The arrangement I propose with the trenches only 6 inches deep, will, I think, be a better one, and I should like to be allowed to try it.

Water-supply

7. Is obtained from wells; last hot season some of the wells dried up, the previous rains having been scanty. The hospital well has been deepened till it is now 60 feet deep, and contains at the present time 30 feet of water. The rise and fall of the sub-soil water varies in the different parts of camp, never rising higher than within 25 feet of the surface in the wells of the Native Infantry lines. I am not aware that the rise and fall of the sub-soil water has in any way influenced the number of admissions from fever, &c., but more accurate observations will be made on the subject this year. The nearer the latrine is to the situation of the well, the worse is the water. On the whole, the water used by the regiment is fairly good; it is slightly hard from carbonate of lime, and its contamination by organic impurities is slight, except in well marked No. 1. The system of allowing every man to put his own dirty *lota* and string into the well is objectionable. Appended is an analysis of the water of the wells used by the native troops.

Food—Quality of, and whether abundant and cheap.

8. The quality of the food is good; and, although wheat, sugar-cane, grain, cotton, &c., are grown in the surrounding districts, and vegetables in the immediate vicinity, provisions are dear. The sepoy on seven rupees a month who remits money to his country, and nearly all do so, is unable to live on more than the scantiest fare.

Clothing.

9. The clothing of the sepoy is ill fitted for natives in India; he requires light, loosely-fitting clothes in the hot season, and a puggree on his head instead of the small cap he wears. The regulation boot when properly softened by the constant use of castor-oil is a very serviceable and proper one.

Duties.

10. Duties, as laid down in General Orders, are not excessive, but, on the contrary, are conducive to health.

Exercise, Amusement.

11. Beyond their duties I am unaware of any amusement or occupation for the men.

Lock-up Room and Cells.

12. Two cells, 10 by 10 and 12½ high, quite adequate for the regimental requirements.

Marches.

13. None: the regiment has been stationed in Mhow since 1872.

Hospital and its Surroundings. Ventilation. Overcrowding. Accommodation.

14, 15, 16, 17. The hospital is a very good one with an open space all round, is well ventilated, and has ample accommodation for the sick of one regiment. The dead-house is still in an unfinished state, the floor being a mass of broken bricks and old mortars. It requires in addition a sink for waters and a table for *post-mortem* examinations.

Conservancy.

18. There are two latrines attached to the hospital, one for females with three seats and the other for males with six seats, and a corresponding number of iron receptacles, which are cleaned out three times a day.

Hospital Water-supply.

19. Water is obtained from the hospital well, situated in the hospital compound, but rather too near the latrines. The result of its analysis will be found in the Appendix marked No. VI.

Sickness. Mortality according to Race.

20. The regiment has not been so healthy as in the previous year, there having been 200 more admissions into hospital, irrespective of 82 men who attend as out-patients suffering from scurvy. The principal cause of sickness appears to be poorness of blood from insufficient feeding. There were two deaths during the year, one from exhaustion in January last, when my predecessor was in charge, and the other in September, from cancer of the liver.

The percentage according to race was 0·29 of Konkani and 1·53 of Hindustani.

Influence of Rain-fall.

24. During the rainy season there is an increase in bowel complaints, and also a larger number of admissions from intermittent fever.

	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Intermittent fever ...	23	10	5	39	16	18	12	57	57	54	30	44
Chest affection ...	13	3	6	2	1	2	...	7	7	4	11	5
Bowel affection ...	7	5	6	2	3	...	...	14	6	2	3	6

The next table shows the temperature, rain-fall, and prevailing wind during each month throughout the year :—

	Thermometer.			Rain-fall.		Prevailing Wind.
	Max.	Med.	Min.	Inches.	Cents.	
January	78	62	46	...	...	N.W.
February...	83	66·5	50	...	...	S.W.
March	87	73·5	60	...	...	S.W.
April	96	84	72	...	12	W.
May	98	88	78	...	85	N.W.
June	95	85·5	76	10	70	W.
July	87	80	73	16	29	N.W.
August	77	74·5	72	6	90	W.
September	87	79·5	72	7	90	S.W.
October	86	76·5	65	...	...	N.W.
November	81	70	59	...	...	N.
December	76	65·5	55	...	...	S.E.
Total ...	...	...	...	42	76	

Epidemics.

25. None.

Vaccination and Re-vaccination.

26. Carried on by the hospital assistant of the regiment.

Total vaccinations	59
Successful	29
Unsuccessful	30
Total re-vaccinations	244
Successful	131
Unsuccessful	113

General Health and Physique of the Men.

27. The regiment contains a large number of Konkanis who do not bear fatigue well; these men are very docile, and have strong home affections, which induce them to live on the poorest grains to enable them to remit money to their relatives in their native villages. The finest men in the regiment are the Punjaubis and Mahomedans.

Treatment.
Special Observations.
Resumé of the whole.

28, 29, 30. There was nothing special in the treatment of the diseases.

The following table contrasts the admissions in 1873 and 1874 :—

	Boils.	General Debility.	Chronic Rheumatism and Lumbago.	Intermittent Fever.	Daily Average.	Total Admissions.	Invalided.	Died.
1873	42	3	49	309	28·2	812	36	None
1874	79	37	81	365	38·2	1,010	60	2

Anœmia.

The difference shown in the above table is, that in 1874 the men were more prone to those diseases which indicate anœmia and lowered vitality.

I would say, then, in conclusion, that the health of the men has suffered somewhat on account of dearness of vegetables (on which subject I have already addressed a letter to the senior Medical Officer, Dr. Thorold), and from early rising, coupled with insufficient clothing during the colder months of the year in a climate like this, where I have frequently seen the thermometer stand at 39° at 6 A.M. in my verandah. I consider the sepoy has ample accommodation in his hut, but it ought to be double-tiled; he has a well-ventilated and good hospital, and with better clothing and cheaper provisions he ought to be a healthy man.

How often during each week the Pupils have been instructed, and in what subjects?

30. The medical pupil daily writes out a portion of a standard medical work, and makes out the morning report; he also copies letters into the letter book. He is questioned daily by the bed-side in materia medica; and the value of symptoms and the treatment ordered, is explained to him.

Well marked No. I.

Water clean, little sediment, smell strong and offensive, used by Moochees of the 16th Regiment N.I., situated 34 yards from the latrine.

Composition.	Grains per Gallon.	
	Result of Analysis.	Good water should not exceed the undermentioned quantities.
Organic matter oxidisable...	6·636	1·5
Oxygen to oxidise organic matter	·318	·075
Chlorine	4·22	3 to 5
Chloride of sodium	6·96	.....
Total solids...	30·8	7 to 35
Volatile solids	11·2	2 to 4
Mineral solids	19·6	3 to 30
Volatile solids not oxidisable	8·2	2 to 4
Total hardness	7·35	4 to 16
Sulphuric acid	3·976	3 to 5

An objectionable water unfit for use.

September 22nd 1874.

Analysis of Water from well marked $^{P.\ W.\ D.}_{2}$ *situated on the parade ground and used by the Christians, Mahomedans, and Hindus of the 16th Regiment N. I.*

Water drawn on 19th September, depth of water in well being 13 feet. The well is made of solid masonry, and has a wooden cover.

The following is the result of the analysis :—

Colour	Clear, no sediment.
Smell	None.
Re-action	Neutral.

Quantitative Analysis.

	Grains per Gallon.		Remarks.
	Good water should not exceed the undermentioned quantities.	Results of Analysis.	
Oxidisable organic matter	1·5	1·386	
Oxygen to oxidise organic matter	·075	·0693	
Chlorine...	3 to 5	3·5784	
Lime	4 to 7	2·548	
Magnesia	1 to 2	3·22	
Sulphuric acid	3 to 5	7·096	
Carbonic acid, cubic inches	12 to 4	.....	
Iron	Trace	None	
Total hardness	4 to 16	10·85	
Clerk's Scale ... Permanent hardness	2 to 4	4·95	
Clerk's Scale ... Removable hardness	2 to 12	5·9	
Clerk's Scale ... Total solids	7 to 35	14	By evaporation.
Qualitative Analysis.			
Ammonia	...	None.	Nessler's test.
Nitric acid	...	Slight zone of rose colour.	Brucim test.
Nitrous acid	...	Blue colour, slight.	Iodide of potassium and starch test.

A fair sample of drinking water used by the Native Infantry.

Well-water from new Well near Sappers' Lines: water used by Officers and Men of 16th Regiment N. I.

December 10th, 1874.

1. Colour ... ...Very slight, hazy.
2. Sediment ... ...Very little, and consists of No. 3.
3. Under microscope ...Vegetable *debris*; no animal or vegetable life.

Composition.	Grains per Gallons.	
	Good water should not exceed the undermentioned quantities.	Result of Analysis.
Organic matter oxidisable	1·5	1·666
Oxygen to oxidise organic matter	·075	·833
Chlorine	3 to 5	1·44
Lime	4 to 7	1·372
Magnesia	1 to 2	2·38
Carbonic acid (cubic inch)	12 to 4	6·5
Iron	Trace	None
Clerk's scale... Total hardness	4 to 16	11·9
Clerk's scale... Permanent hardness	2 to 4	5·25
Clerk's scale... Removable hardness	2 to 12	6·65
Total solids by evaporation	7 to 35	32·2
Volatile solids	2 to 6	18·20
Mineral solids	5 to 30	14
Ammonia	Re-action with Nesslers.	Slight test

Results of Analysis of Water forwarded by Dr. Heffernan, 25th Regiment N. L.I., for examination. Received October 3rd, 1874.

Analysis on 3rd and 4th October:—

Colour ... ... Clear.
Smell ... ... After 48 hours a faint odour.
Sediment under microscope, fragments of decaying vegetable matter and a few infusoria.
Re-action ... Slightly acid.

Quantitative Analysis.

Composition.	Grains per Gallon. Results of Analysis.	Good water should not exceed the undermentioned quantities.
Total solids (by evaporation)	28	7 to 35
Chlorine	4·572	3 to 5
Chloride of sodium	7·534	.....
Magnesia	3·36	1 to 2
Oxidisable organic matter	2·016	1·5
Oxygen to oxidise organic matter	·1008	·075
Clerk's scale... Total hardness	10·15	4 to 16
Clerk's scale... Permanent hardness	7·0	2 to 4
Clerk's scale... Removable hardness	3·15	2 to 12

The total solids are large; the amount of organic matter and chlorine is larger than it ought to be. This shows contamination with sewage, but in such small quantity that the water may be termed fair, though hard.

M. M.'s 3rd Regiment N. L. C.

NEEMUCH.—In medical charge of Surgeon-Major MACDOWALL; Strength, 302.

Location and Movement of Corps.

1 and 2. The head-quarters of the regiment have remained at Neemuch; a squadron detached at Nasirabad has been relieved from hence; also smal parties, outposts at Bothle Gunj and Malharghar.

Topography and Physical Geography.

3. *a.*—Neemuch is situated not far (14 miles) from the foot of the vast central tableland which extends from Sookdewji, 16 miles distant to the north and east, over a great part of Central India.

On a clear day the irregular basaltic and trap formations of the hills to the north-eas can be seen from near camp. A beautiful granite * is found at Gangral, about 50 miles distant.

The whole region is igneous or palœo-volcanic, but metamorphic quartz rock is also found 20 miles off, and limestones 6 miles distant.

Neemuch is situated on a gentle elevation of trap rock† surrounded in many directions by tracts of disintegrated basalt and trap in the form of laterite conglomerate and "kunkur," consisting of somewhat rounded fragments of the rock in concretionary limestone; also clay and drift. Black alluvial soil fills up the hollows and water-courses. This is of great fertility A grey, unfossiliferous limestone is found some 6 miles distant, and I have no doubt that fo s siliferous stratified rocks must occur, but I have not seen any as yet.

The trap tufa is strongly coloured with iron, and smelting is carried on at various places some miles distant.

Height above the sea variously stated as 1,476 feet to 1,600 feet.

The cantonment occupies an area of about 2 miles long (from N.W. to S.E.) and about 1 mile broad, rising gradually from the bazaar (in S.E.) to an elevation of about 58 feet at the new barracks above the lowest part of the camp.

* Or rather syenitic granite (not syenite), as it is a quaternary compound, and apparently contains, besides quartz and felspar, both hornblende and mica.

† Whether this rests on primitive rocks (granite, &c.) such as those at Gangral, or is rudely bedded over metamorphic schists, &c., through which it has been protruded, I have not been able to ascertain. Large blocks of basalt are seen in the walls of wells, or, at all events, of very dense masses of trap.

b.—The water is drawn from numerous wells and from two rivulets (bunded in the hot weather) which run, one skirting the eastern and one the western side of camp in a southerly direction. I propose making an essay at a systematic analysis next year; neither the means nor the opportunity are at present at my command.

Roughly tested with permanganate of potash, and examined by the microscope, the water appears to be tolerably good. On the ninth day after collecting, on the small quantities of vegetable decaying matter, which had subsided, paranema globosa and paramecium aurelia, grammatophora, and numerous amœbæ were, of course, seen.

The supply of water being habitually deficient in the hot months, a small tank has been bunded on the N.W. of, and 600 yards from, the European barracks. It seems to have had some effect (?) on the health of the troops and station. The water in the wells seems to be generally within about 14 feet of their mouths during the fever season. A sharp rain-fall occurred early in May last year, so that few wells ran dry; otherwise the tank seems to have had little direct effect on the height of water in the wells. No careful levels had been recorded, it appears, before the tank was repaired. The levels vary little, showing mere local feeding. The level of wells at the European barracks is, according to the Executive Engineer, higher and sometimes lower * (?) and "independent of the level in the tank"†, which is separated from it by a more or less solid platform of traps, but through whose fissures, faults, &c., water must, of course, make some way.

c.—The drainage is entirely surface drainage, with the exception of some covered masonry drains in the large cantonment bazaar. These too are not sullage drains, but carry little else than storm water. I have made, and seen carried out, numerous suggestions for the improvement of the cantonment, as Sanitary Officer; and other works are still in progress.

Effects on Climate.

4. As might be expected where a rich alluvial soil fills up all the hollows of an almost tropical, trappean district, which has a saturating rain-fall rapidly followed by an extremely dry atmosphere and varying temperature, the climate is, in consequence of these physical conditions, at certain periods malarious. But the fever, with rare exceptions, is, or was, generally of a simple ague type.

As the immediate neighbourhood is not a very wooded one, little more than the periodical rains occur; these vary in amount from year to year, being on an average about 28 inches, but sometimes as much as 60 inches, not depending much on local influences, but probably connected with the prevailing meteorological states at the equatorial or Himalayan regions. The prevailing winds are chiefly N.E. from September to the end of January or February, N.W. from March to end of April, S.W. and N. W. and even N.E. (16 times) in May, N.W and S.W. and even N.E. (9 times) in June, N.W.S.W. (7 times) in July, N.W.S.W (28 times) in August. South-west is by no means the only wind prevailing during the monsoon. It is also remarkable that the northerly winds almost always bring rain during the monsoon months. There is generally a fall of rain about January.

A long hot spring and summer and a comparatively very cold autumn and winter (thermometer sometimes down to 45° F. in south verandah) are the consequences of the situation on the edge of the tropics, where the sun's heat advances with his N. declination and returns with his S. declination over the same regions within two months almost, viz. June and July.

Lines.

5. The lines of the 3rd Light Cavalry are situated to the eastward and in the lowest part of camp. The huts (which are in good repair) are too small (cubic space per man 880 cubic feet, area 88 square feet), and not raised on plinths. They are some of them even dug out about one foot deep. They are the property of the men. The ventilation is through the tiles (efficient). The bazaar is on the same plan as the lines. There is a village and small tank, three quarters of a mile off, on the north-east. The stream which skirts the camp on this side is used for watering the horses.

Conservancy and Sanitary Arrangements.

6. The rocky nature of the soil has long prevented trench latrines. I have, however, had the masonry latrines condemned, as being too near the lines; and, as pointed out in my last year's report, each hut has a small court-yard used by the high-caste women for purposes of nature, as they may not go to the public latrines. The excreta are carefully disinfected with ashes, and removed to the receptacles at the family's own expense. Neither the sweepers nor the carts appear to be numerous enough to keep the place properly sweet, although immense pains are taken by all concerned; nor does it appear (on applying for more) that this number can be increased. The removal of the latrines further off will probably act satisfactorily.

* Probably, as since explained by him, only when extra water is drawn for the barrack "tatties", &c. I think a shaft ought to be sunk to clear up the question of the sub-soil-water.

† This seems to be a statement of facts requiring at least further observation and confirmation.

Water-supply. 7. The water is drunk solely from four wells sufficiently protected from pollution, and is considered good (see 3 *b*).

Food—Quality of, and whether abundant and cheap. 8. The men consider the bazaar or market to be well supplied. There is a regimental garden for vegetables.

Clothing. 9. The clothing is of excellent European cloth.

Duties, and their Effect on Health. 10. The cavalry duties seem in no way to militate against the health of the men, save in the way of horse-riding accidents, &c.

Exercise, Amusement, and Occupation. 11. Horsemanship, Indian clubs, single-stick.

Lock-up Rooms and Cells. 12. The cells, &c., are well built and ventilated.

Marches. 13. The detachments are relieved from time to time. At Nasirabad once in two years.

Hospital and its Surroundings. 14. The hospital is only temporarily used till the proper one is given up by the Royal Artillery.

Ventilation. 15. It is large, airy, clean, and well situated.

Over-crowding. 16. Once a little crowded, during fever months, for a week or so.

Accommodation and Defects. 17. Some alterations in the ridge-ventilation are needed, and are being carried out. A dead-house is required.

Conservancy. 18. An excellent masonry latrine, with pans, is used.

Hospital Water-Supply. 19. (See 3 *b*). For the *lines* from five wells altogether. Four are much used, and not open to contamination.

Depths No. 1 (near musjid), 34 feet deep.
„ No. 2 (near garden), 22 „
„ No. 3 (near garden), 24 „
„ No. 4 (in the lines), 26 „
„ No. 5 (behind garden and close to river) 15 feet; not deep, and not used, save for washing

For the hospital the water is procured from two wells not open to contamination. Water good.

Sickness, Mortality, and Invaliding. 20. The regiment has not been so healthy this year as in 1873. The rain-fall (nearly double the average) has caused the fever cases to be also nearly double in number. As the regiment is situated further from the tank than the Native Infantry, which has not suffered exceptionally, it is probable that the rain-fall was the principal cause and not the tank alone. Excessive cold and sudden changes of temperature from 108° to 45° during the year, and from 81° to 45° during the twenty-four hours, will account for the lung affections. Small-pox raged in the neighbourhood (see 25, Epidemics).

Summary.

Fevers			269
Rheumatic affections			19
Syphilitic affections			8
Eye diseases			18
Lung diseases ...	Bronchitis	14	24
	Pneumonia	4	
	Pleurisy	1	
	Phthisis pulmonalis ...	2	
	Other diseases of this class.	3	
Dysentery			5
Hepatic diseases			4
Gonorrhœa and its complications			7
Skin diseases			50
Local injuries			69
Other diseases			29
Total admissions ...			502
(or 166·22 per cent.)			

Number of men invalided 8 (or 2·6 per cent.)
Number of deaths during the year, 3.

Principal Causes of Sickness.

21. Unusual rain-fall (nearly double) and consequent excess of malaria, neighbouring tank, * (?) cold causing lung disease, want of matrasses and excessive ridge-ventilation in hospital (now modified), aggravating all pulmonary complaints. The neighbourhood of artillery barracks has long been notorious for ophthalmia. Horse-riding causes many surgical injuries. Boils and skin diseases are also developed by the same cause.

Principal Causes of Mortality.

22. (1) pneumonia (inter-current in a case of phthisis); (1) abscess of the liver; (1) small-pox, confluent (exposure in a rowtie to the great heat hastened the final issue.)

Mortality according to Race.

23. Hindus 2, Mussulman 1.

Influence of Rain-fall.

24. Most marked, nearly doubling the frequency and intensity of malarial fevers and dysentery.

Epidemics.

25. Small-pox raged in the foreign territory around us, and was imported, but was early stamped out. An aggravation in intensity and frequency of malarial fevers cannot be called otherwise than endemic. (?)

Vaccination and Re-vaccination.

26. Successful primary vaccinations ... ... 28.
Do. re-vaccinations ... 37.

General Health and Physique of the Men.

27. Deteriorated by not being recruited in Hindustan.

Treatment of Disease when special.

28. Nothing special.

Special Observations.

29. The effect of the tank on the health of the troops it is perhaps difficult to determine, as the rain-fall has been nearly double this year. It is necessary, however, carefully to note that fever has been nearly double in frequency and intensity since it (the tank) was re-established.

Being an extra-tropical climate, lung diseases and rheumatism are very prevalent. One case of pneumonia (inter-current in a phthisical patient) was rapidly fatal. He was in hospital at the time chiefly for an abscess, traceable to guinea-worm in the foot (attacked with pneumonia in hospital).† Purulent infiltration of the right lung was found (weight 3 lbs. and 10 ozs., one pound and half above the average of a European right lung, which is, according to Aitken, only about 2 lbs. 3 ozs.). This enormous infiltration was alone sufficient to account for death, but a fibrinous clot was found blocking up the right bronchial artery. It is difficult to decide how much the cold alone or pyœmia, caused by the absorption of poisonous purulent matters from the abscess in the foot, contributed to the quick formation of pus in the lung. The temperature of the body—106°—as indicated by the thermometer foretold a fatal result from the beginning of the attack. In the innumerable cases of pyœmia which I saw in Paris during the siege, purulent infiltration of the lung was almost always present, and caused often by trifling suppurated bullet wounds as well as by severer injuries. Abscesses in the liver and joints were less frequent accompaniments of pyœmia (or septicæmia).

In the fatal case of abscess of the liver the purulent collection burst into the lung first, and the man appeared to improve, but dullness remained very marked over all the right side base of lung and pit of stomach; no swelling or pointing. He burst another abscess into the duodenum, and died in spite of nourishment and stimulants. The chloride of ammonia was tried, but was not likely to be of use in a case of rapid suppuration.

Five slight cases of dysentery yielded to ipecacuanha.

The fatal case of small-pox was confluent, and as severe a one as I ever saw. The man had been vaccinated (?) in his own country. As the heat in rowties proved so fatal in this case, grass huts were built as soon as possible.

Ophthalmia is always prevalent in the hot months (18 cases).

One case of compound fracture of tibia by a kick was able to walk on crutches after thirty days, through the early application of the starch-bandage apparatus (with a small trap-door for dressing the wound).

Another case of fracture of both bones of the leg is doing well under a similar mode of treatment. He is a follower, can lift his leg off the bed (twelfth day after the application of starch bandage, &c.)

There was also a double compound fracture of the jaw, treated in the same way (the result of a kick from a horse).

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* It has been suggested that the digging up of trap for the foundations and building of the European barracks has had some influence in causing fever. But this work has gone on for eight years; the excess of fever has only obtained for two years past.

† The cold was intense at the time. I have since had the ridge-ventilation closed. Sepoys have no matrasses or rugs allowed them by Government, and the ridge-ventilation is only bearable by men who are very warmly clothed, as no ceiling cloths are allowed for native hospitals.

A small "enchondroma" was excised from over the great trochanter, which had caused great inconvenience (doing well); no return of disease as yet.

Amongst camp-followers the following operations were performed:—Amputation at the shoulder, followed by tetanus, treated successfully with chloral, calabar bean, and calomel and opium combined. He could not open the mouth more than a sixth of an inch for three or four days, and episthotonic spasms occurred every hour on the first and second day.

All symptoms disappeared gradually in about a fortnight.

A large tumour of the foot was excised with difficulty from between the first and second metatarsal bones.

An interesting case of prolapsus ani, as large as a child's head, was with great difficulty returned under chloroform.

A large fibrous tumor was transfixed, and tied with some difficulty (it sprung from the vomer, sphenoid, and palate bones apparently). It then sloughed and did not return. Many of these cases occurring amongst followers were treated in the staff and detail hospital.

I have to note on the remarkable success with which poultices of "babul" bark mixed with linseed were used. The bark alone (without linseed) made too hard a poultice. Large, deep, malignant-looking ulcers, encircling the leg in one case, healed up in a marvellously quick and satisfactory manner.

Resumé of the whole.

30. The regiment has suffered much from fever, 5 per cent., as compared with 3·9 per cent. daily sick last year. But the rain-fall has been nearly double of the average also.

The lines are not in the neighbourhood of the tank lately restored. The hutting accommodation for the men and families is miserably limited in size, form, &c. The system of private court-yards to each hut is peculiar and unsatisfactory. The climate is by no means a tropical one for six or seven months in the year; the northerly monsoon seems to be the prevailing one.

Native Medical Pupils.

31. No native medical pupils.

H. M.'s 24th Regiment N. I.

NEEMUCH.—In medical charge of Surgeon-Major COCKELL.; Strength, 646.

Location and Movements of Corps.

1. The regiment is stationed at Neemuch, where it has been for the last year.

Detachments.

2. There are no detachments at any place.

Topography and Physical Geography.

3. The cantonment of Neemuch is situated on tableland 1,700 feet above sea-level, in latitude 24°27′ N., longitude 74°58′ E. 1st, the soil is laterite, an amalgamation between the detritus of trachite (or volcanic rock) and common clay or alumina; 2nd, the water is chiefly derived from the soakage of the rain-fall, which is about 30 inches every year, and is received into wells built for the purpose, but whether connected or not with underground springs, has not yet been proved, as some of the wells became quite dry at the beginning of the rainy season; 3rd, the drainage is chiefly the filtering of the rain water through the soil, but where the ground is naturally sloping, then it runs off into two nallahs that wind round the cantonment. Above this tableland to the north-east (but at a distance of thirty miles) rise hills whose exact height are not yet known, this part of India having not been regularly surveyed yet; they are supposed to be a continuation of the Aravelly range at Abu.

The Effects on Climate.

4. The climate of Neemuch is very good—not too hot in the hot weather, and cool and bracing in the cold season from December to February. The greatest height of standard thermometer is 110° in the shade, least height or minimum in the cold season, 47°. This station has been greatly improved lately by the painstaking care of the late staff officer, who has had trees planted to form avenues in the roads. The lake or tank also is a source of good health to the cantonment instead of being deleterious, as has been supposed by many. There has been no cholera this year—rather an exceptional case for Neemuch.

Lines.

5. The superficial area of the lines is 14 acres, or 62,400 square yards, ventilation admirable, bazaar clean, neighbouring villages none within a mile, drainage good; but, as I said before, the peculiar nature of the soil (trachite alumina) makes it very porous, and the rain is quickly absorbed, and the outer surface soon dry. Writing at this season of the year—January 1st, 1875—the sub-soil water, which in the month of October was close to the surface, is now 12 feet below it, and

the regiment has regained its usual health, the average daily sick being at present 30. The only tank in Neemuch is about half a mile from the new infantry barracks, and one mile and a half from the Native Infantry lines.

Conservancy and Sanitary Arrangements.

6. These are the dry-earth system, with the addition of plenty of lime. The latrines are situated about a quarter of a mile from the lines, and to leeward of the south-west winds in the rainy season. They are kept in good order by a strong staff of sweepers.

Water-supply.

7. From wells, of which there are plenty near the lines. The water is good, and generally lasts till the next rain-fall; it appears to be purely local from the absorption of the rain-fall, and yet it is always fresh, except towards the close of the hot season, when the wells are drying up. There is no source of impurity, as there are no latrines near any well, and the rims of the wells are well stone-floored, so that the water used for bathing purposes runs off to a distance of 6 feet or more No suggestions can be made to improve the water. Dracunculi are rare here, proving the wate to be pretty free from animal matter.

Food—Quality of, and whether abundant and cheap.

8 The usual cereals—wheat producing very good flour; and dhall, indian maize, jowari and bajri, all coming in from the outlying villages. The food is not very cheap. The price of food varies considerably, being more expensive in the rains, when the country roads are impassable. The quality is good. The rice is imported from Agra, and is not first class.

Clothing.

9. The usual native clothing—cotton garments, and cumblies or blankets, a mixture of wool and cotton.

Duties, and their Effect on Health.

10. The usual duties of a Native Infantry regiment—guards, escorts, and parades, which have had no bad effect on its health. Eighteen escorts went out last year.

Exercise, Amusement, and Occupation.

11. Exercise parades three times weekly; amusement unknown; occupation (when not on duty) I am not aware that anything is done, except by a very few, such as carpenters, gold-embroiderers, and book-binders, who fill up their spare time by making articles.

Lock-up Rooms and Cells.

12. The lock-up room in the quarter-guard has ample accommodation and ventilation, and the cells ditto.

Marches.

13. There have only been two marchings out this year.

Hospital and Surroundings.

14. There are two capital buildings set apart for hospitals in very good order and well ventilated, rather cold in the cold weather, owing to their having stone floors, but first-rate in the hot season. They can accommodate 40 or 50 men each with ease and not be over-crowded. Their usual complement is 20 or 30, but in times of sickness the spare building forms a capital second hospital, and as such has been used every year in Neemuch by the Native Infantry regiment, when there are sometimes over 100 men in hospital, beside those convalescent in the lines. The average cubic space for each patient is over 1,200 feet, when the building has 18 beds in each ward, of which there are three in each building. The buildings look north-east, and have nothing near them, but the out-houses belonging to the subordinates, cooks, and dooly-bearers. There is a good well about 50 yards off, midway and in front of both buildings. The latrine is situated about 200 yards away in a northerly direction and to leeward of the prevailing wind; those men who are too sick to walk so far, are accommodated with chatties and a commode filled with earth by the sweepers, which are afterwards removed to the latrine. The latter is the earth system, and filth receptacles which are carted away in the evening.

Sickness, Mortality, and Invaliding.

15. The sickness of the regiment has been chiefly intermittent fever, of which during the months of September, October, and November we had 560 in the hospital and lines; the next in order of frequency is bronchitis, chiefly after the rains.

The total admissions for the year were 1,346.

Invalided	50
Died	6
On sick furlough	9

Principal Causes of Sickness.

16. The general debility of the men who suffered severely at Deesa in 1872 from dengue and a severe type of ague a month after the dengue; they ought certainly not to have marched to Neemuch. Last year 50 ought to have been invalided, but 33 only were, leaving 17 to swell the sick list, and thus

show an abnormal number of men as sick to percentage of strength. This year we have done better, and the health of the regiment may now be said to be good.

17. The chief cause of sickness has been that already stated, though, doubtless, Neemuch itself is not a particularly healthy station, as it has a very great range of thermometer on the average—over 28° in the hot weather and 33° in the cold; the hot weather being between 70° and 100° F. and the cold (two months only, December and January) between 43° and 76°. Taking four months—November, December, January and February—we have 33° range of thermometer. I have not reckoned August amongst the hot month, as it is neither hot nor cold, and a thermometer range of 14° only; the maximum being 86° and minimum 72°.

Principal Cause of Mortality.

18. To this I ascribe also the chief cause of mortality, the great range of thermometer acting on debilitated and diseased conditions.

Mortality according to Race.

19. Six men died; their race was as follows:—

Hindustanis	3
Konkanis	2
Punjabi	1
	6

Influence of Rain-fall.

20. The rain-fall was this year over the average, 58 inches fell, and the ground was thoroughly saturated, and the water in the wells rose to the surface nearly. In October the greatest amount of sickness prevailed, and the rain-fall at that time was being absorbed, and now at this date—1st January 1875—the water is 12 feet below the surface.

Epidemics.

21. There have been none to any extent. This year we had a few cases of small-pox during the months of February, March, April, and May; only 3 men were attacked and 6 children. None died.

Vaccination and Re-vaccination.

22. Forty-four children were vaccinated during the year; no re-vaccination was practised, that having been done at Deesa in 1871.

General Health and Physique of the Men.

23. The general health is now pretty good, there being only 20 in hospital at this date; the physique of the men is pretty fair, and they look well, and march steadily on parade.

Special Observations.

24. These will chiefly refer to the men's huts, which are not suited to keep them in good health, their dimensions being insufficient.

Huts.

25. The dimensions of the huts, both for single men and families, is breadth 6 feet, length 9 feet, height 9 feet. The height of the gable is 12 feet, but it slopes to 6 feet at the door—total cubic capacity 480 feet. They are in pretty good repair, but are not built on plinths; the ground is raised into a small bank round the huts to prevent rain coming in, but the interior is so small that there is not room for an ordinary-sized charpoy, and the men and families, aa rule, sleep on the ground or on a kind of raised mud-bed (where there is one). This kind of arrangement is certainly not conducive to health. These lines have been condemned over and over again by both Medical Officers in charge and administrative Medical Officers, but as yet nothing has been done. The latrines are situated about half a mile off, and to leeward of the prevailing winds; they are kept in good order by a competent staff of sweepers, and plenty of lime is used, and the filth receptacles emptied once daily. The dry-earth system is used, combined with lime or chunam The depth of the sub-soil water is now 12 feet below the surface.

Medical Pupils.

26. The medical pupil has been examined weekly up to the time of the great sickness in September and October, and his instruction will be resumed when the musketry drill is over; he has made progress in the study of anatomy, and understands what he reads.

27. In looking over the 31 questions propounded I came to the conclusion that the regiment suffered less in health in 1874 than it did in 1872 (the dengue and secondary fever year in Deesa), but I think that its health was very much deteriorated in 1872, and that if it could have been avoided, it ought not to have come to Neemuch. Nevertheless this year (1874) has been an exception to the general rule. The regiment marched in here by wings, the right wing and head-quarters arriving on the 15th of January 1874, and the left wing on the 11th of February of the same year. The regiment was in good health on the march. On the much-talked-of sanitary state of the lines I think it may be farly said that, if the men's huts were larger, there would be less sickness, and the cheapesti way for Government to do this is to make two huts into one, and build the same number on the space between the spare hospital and the present old lines. This will give double the quantity of cubic space, namely, 972 cubic feet instead of 486 as at present, and this plan would be the best, as the present huts communicate in most cases with one another, and the present small opening could be enlarged, which would just suit the family man. For it must be remembered that each company has its family and single men, and they are often in two adjoining huts when for the sake of decency the communicating hole must be closed, and thus a family of five perhaps have only 486 cubic feet of air between them, for we generally find the little hole in the wall that answers the place of a window stopped up with rags; therefore I think the plan I propose the best. The cubic space in the cavalry huts is 880 feet per single sowar or family, nearly double our capacity, and the regiment is very healthy. The tank that is about half a mile from the European barracks, has been supposed by some to have a bad influence on the health of the station; but I believe it is an erroneous idea, as if the bottom is kept clean (which is easily accomplished in the hot weather, when it is dry) it should be beneficial instead of hurtful, as it cools the air and attracts the surrounding air, and keeps it moving, as there is always fresher air in the vicinity of water.

Resumé of the whole.

To sum up: I think I may say that Neemuch is a healthy station, there is seldom more than a month's real hot weather (that is dead heat with little or no air stirring), which occurs generally in May, just before the rains begin, and afterwards it is most pleasant.

The average strength of the regiment is as follows according to countries and their admissions into hospital:—

	Strength.	Admissions into Hospital.
Konkanis	388	742
Hindustanis	93	181
Deccanis	66	259
Punjabis	39	62
Madrasis	19	22
Goanese	11	23
Other countries	30	57
Total...	646	1,346

The barometer ranges in the hot season between 28·50 and 28·80, and in the cold is pretty steady at 29, the height of Neemuch being 1,700 feet above sea-level.

H. M.'s 23rd Regiment N. L. I.

NASIRA'BAD.—In medical charge of Surgeon J. SIMPSON; Strength, 687.

Location and Movements of Corps.

1. The regiment has been stationed at Nasirábad during the year.

Detachments.

2. No detachments.

Topography and Physical Geography. Soil, Water, and Drainage.

3. Nasirábad Cantonment is situated on a slight rise in the plain, bounded on the north and north-west by the Aravelli range of hills, and open on all other sides, with scarcely a sign of trees, except near the few tanks where there is cultivation, at an elevation of 1,486 feet

above the sea. The soil is of sand or gravel over primitive rock, water is found at a depth of from 30 to 40 feet below the surface on the higher parts of camp, but out in the fields in some places it is only 15 to 20 feet, and nearly in every case of a brackish character, unfit for drinking. The drainage of camp is good, as the ground slopes on both sides.

Effects on Climate.

4. From the nature of the soil, during the hot season the climate is hot and dry; after the rains, the only unhealthy season, malaria is prevalent.

Lines.

5. The lines are good, of the ordinary style built for native troops. No arrangement for ventilation; the only fresh air allowed to enter, is what may pass through the door-way. Each hut is about 10 feet by 10. There is a small regimental bazaar close to the lines for the sale of grain, &c., to the sepoys. No villages within several miles of the lines, on account of the situation being low. The natural drainage is not so good as in other parts of the camp, but by means of artificial drainage the water during the rains is carried off, and none allowed to collect about the lines. There is a small tank near the lines which is filled during the rains. I believe it is to be done away with.

Conservancy and Sanitary Arrangements.

6. Trench latrines are used, situated some distance away from the lines.

Water-supply.

7. None of the wells in the lines produce water fit for drinking; so a great part of the men are supplied from Dilwára, two miles from camp, by camel puckalls. Others use Diggi water, which is close by.

Food—Quantity of, and whether abundant and cheap.

8. Good, abundant, and cheap.

Clothing.

9. Infantry uniform worn over ordinary native clothing.

Duties and their Effects on Health,

10. Ordinary parades and guard duties during the hot season and repairing lines. The health of the men do not seem to be affected by their duties.

Exercise, Amusement, and Occupation.

11. There is a gymnasium in the lines which a great many men and boys attend under a trained instructor.

Lock-up Rooms and Cells.

12. There are two cells. Ventilation is good: 1,300 cubic feet; superficial area 100 square feet.

Marches.

13. None.

Hospital and its Surroundings.

14. The hospital is a comparatively new building, built on the Bengal standard plan, at some distance from the lines, and well away from any other buildings.

Ventilation.

15. Is good.

Over-crowding.

16. There has been no over-crowding.

Accommodation and Defects.

17. The accommodation is sufficient: two large wards and three small separate wards.

Conservancy.

18. One cart is kept at the hospital, which twice a day carries the filth away beyond cantonment limits.

Hospital Water-supply.

19. From a well in the hospital compound, and from the Diggi.

Sickness, Mortality, and Invaliding.

20. Total admissions for the year—897, deaths 7, and invalided 49.

Principal Causes of Sickness.

21. Fever 440, chronic rheumatism 45, boil 38, ulcers 34, diarrhœa 33, contusions 24, and dysentery 8.

Principal Causes of Mortality.

22. Pneumonia 3, laryngitis 1, hepatitis 1, fever with pleurisy 1, and aneurism 1.

Mortality according to Race.

23. Hindustanis 4, Deccani 1, and Mussulmans 2.

Influence of Rain-fall.

24. There is always a great increase in the number of sick towards the end of the rains, when malaria becomes prevalent.

Epidemics.

25. There has been no epidemic during the year.

Vaccination and Re-vaccination.

26. Vaccination has been regularly carried on in the regiment.

General Health and Physique of the Men.

27. With the exception of the months of September, October and November, the general health of the men was good.

Special Observations.

28. The regiment has been stationed here for three years, and this year shows a great decrease in the number of admissions compared with the two previous. The admissions for the three years are as follows :— 1,872, 1,801; 1873, 1,201; 1874, 897.

The following table will show at once the number of cases remaining from the previous year, admissions during the year, and those in hospital on the 1st January 1875 :—

Diseases.	From last year.	Admitted.	Remaining on the 31st December 1874.	Diseases.	From last year.	Admitted.	Remaining on the 31st December 1874.
Malarious fevers	8	440	3	Diseases of the liver	...	9	...
Rheumatic affections	2	60	1	Do. of the spleen ...	...	15	...
Syphilitic do. ...	...	1	...	Bright's disease	...	2	...
Scorbutic do.	...	6	...	Gonorrhœa	...	5	...
Other minor causes of general diseases	...	20	...	Diseases of the generative system	...	11	...
Diseases of the nervous system...	...	10	...	Ulcer	2	34	1
Do. of the eye	...	13	...	Boil	...	38	1
Do. of the ear	...	1	...	Skin diseases	...	24	...
Do. of the heart	...	1	...	Other minor causes of local diseases.	1	5	...
Do. of the lung	1	50	1	Injuries, shoe-bites, &c. ...	2	54	2
Do. of the stomach and intestines ... Diarrhœa	...	33	...	Snake-bite	...	1	...
Do. of the stomach and intestines ... Dysentery	...	8	1				
Do. of the stomach and intestines ... Others ...	...	56	...	Total... ...	16	897	10

There has been no epidemic among the troops at this station for some years.

The admissions for fever show a marked decrease compared with last year, being 346 less; but there has been a considerable increase in other cases.

The fever was generally of a mild character, the young recruits as usual suffering most The admissions for dysentery have been few, only 8 cases during the whole year; this I think is a good deal owing to the supply of Dilwárra water.

The climate of Nasirabad is hot and dry, and, with the exception of three months after the rains, is, I consider, a healthy station. During these three months, although the sun is very powerful during the day, the night air is cold and damp, and is very likely the cause of sickness at the season.

The trench latrine system is carried out, but the ground is so limited that it has to be used over and over again. This I think very objectionable, as it is impossible that the small piece of ground with a sandy soil can absorb the excrement for years without being cultivated. During the rainy season the system does not answer, as the ground is too damp, and on a trench being opened some time after use very little change has taken place in the deposit, and in a great many instances after a heavy fall of rain the ground is covered with white maggots, and the water washing over this ground must soon pollute the wells at a lower level.

For the last two years the regiment has had a supply of water from Dilwárra, the same well from which the European troops are supplied, though all do not use it. I think it has had some good effect on the health of the men. A good many use Diggi water, which is good and close at hand.

The hospital is a style of building seen in very few stations in the Bombay Presidency, and although, a fine building to look at, I consider it not adapted for natives. It consists of two large wards, with three separate wards, two dispensaries and office; it has ample accommodation for the ordinary sick of any regiment, and stands on a rise in the *maidan*, well away from any other building. The ventilation ought to be good from the number of doors and openings; but it is very hot in the hot season, and wretchedly cold in the cold season.

Squadron H. M.'s 3rd Regiment Light Cavalry.

NASIRA'BAD.—In medical charge of Surgeon J. SIMPSON; Strength, 127.

Location and Movement of Corps. 1. No movement of the squadron has taken place during the year.

Lines. 2. The lines are good, of the ordinary style built for native troops. No arrangement for ventilation; the only fresh air allowed to enter, is what may pass through the door-way. There is no bazaar or village near. The drainage is good, as the situation is favourable. No tanks.

Conservancy and Sanitary Arraugements. 3. Trench latrines are used; they are situated at some distance from the lines.

Water-supply. 4. Good, and sufficient from wells in the lines.

Food—Quality of, and whether abundant and cheap. 5. Good, abundant, and cheap.

Clothing. 6. Sowar's uniform worn over ordinary native clothing; not supplied by Government.

Duties and their Effects on Health. 7. Ordinary parades and guard duties in lines; the health of men do not seem to be affected by their duties.

Exercise, Amusement and Occupation. 8. None.

Lock-up Rooms and Cells. 9. The guard-room is the only lock-up room; it is a new building, and gives 449 cubic and 28 square feet per man. There is one cell built separate, 1,200 cubic and 100 square feet per man.

Marches. 10. None.

Hospital. 11. The hospital is a comparatively new building, built on the Bengal standard plan, at some distance from the lines, and well away from all other buildings.

Ventilation. 12. Good.

Over-crowding. 13. There has been no over-crowding.

Accomodation and Defects. 14. The accommodation is sufficient—one large ward with two small separate wards.

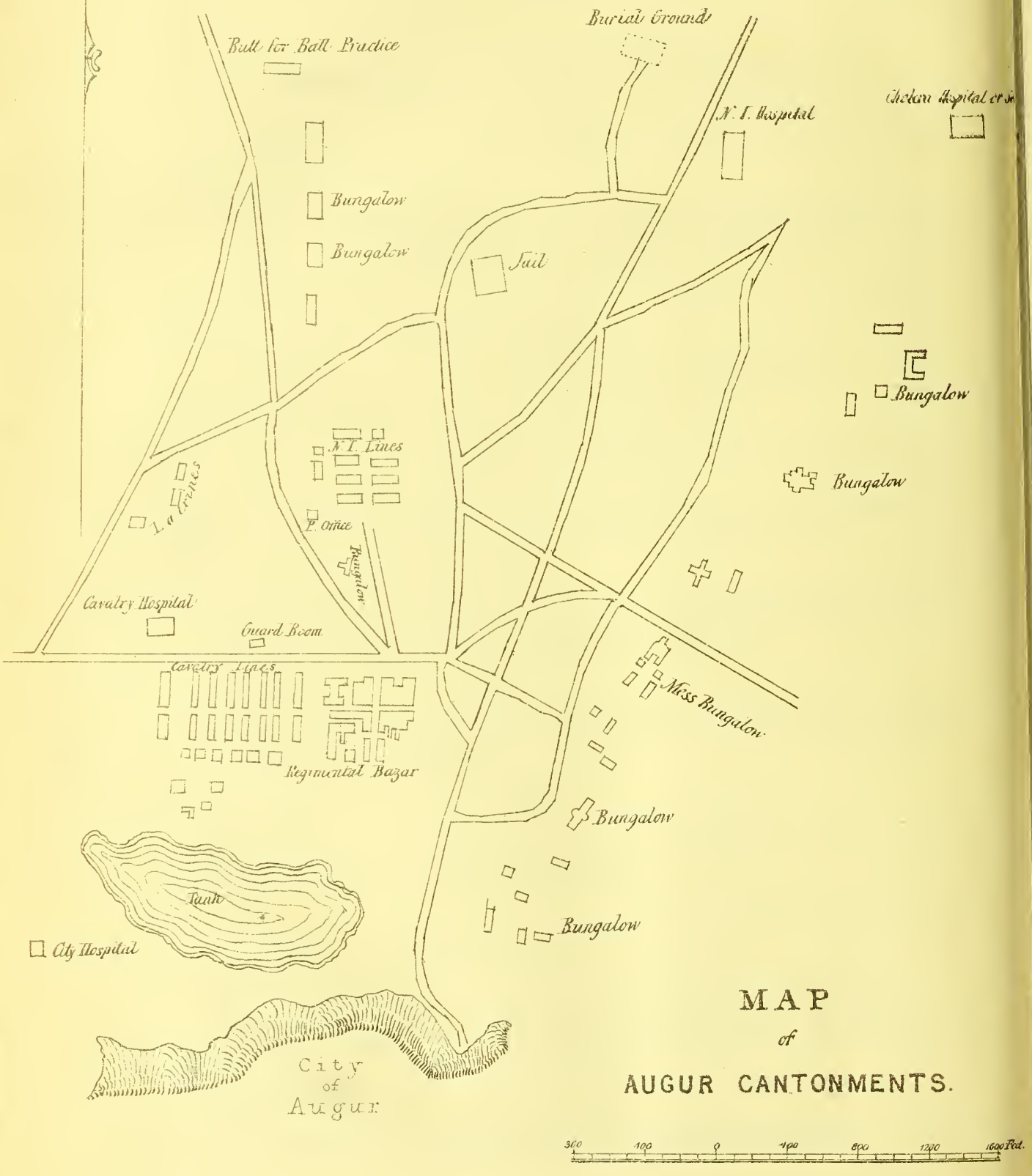
Conservancy. 15. One sweeper is kept on the hospital establishment, and a cart calls twice a day.

Hospital Water-supply. 16. From well in lines sufficient, and of fair quality.

Sickness, Mortality and Invaliding. 17. Admissions during the year 162—fever standing highest, boils and contusions next. Only 2 cases of dysentery and 2 of diarrhœa. No deaths during the year. Four men were invalided.

Principal Cause of Sickness. 18. Fever is the chief cause of sickness.

Influence of Rain-fall. 19. There is always a great increase in the number of sick towards the end of the rains, chiefly from fever.


Butt for Ball Practice
Burial Grounds
N. I. Hospital
Bungalow
Bungalow
Jail
Bungalow
N. I. Lines
La Lines
P. Office
Bungalow
Cavalry Hospital
Guard Room
Cavalry Lines
Regimental Bazar
Mess Bungalow
Bungalow
Bungalow
Tank
City Hospital
City of Augur
MAP
of
AUGUR CANTONMENTS.
300 100 0 400 800 1200 1600 Fed.

Epidemics. 20. The squadron has been free from epidemics during the year.

Vaccination and Re-vaccination. 21. Has been regularly carried on during the year.

General Health and Physique of the Men. 22. The general health of the squadron has been good on the whole.

During the year the squadron has, on the whole, been healthy, although there is a slight increase in the admissions over the former year. The men have suffered very little this year from bowel complaints.

Left Wing 10th Regiment N. L. I.

AUGUR.—In medical charge of Surgeons R. CALDECOTT and D. F. KEEGAN; Strength, 206.

Location and Movements of Corps. H. M.'s 10th Regiment Bombay N. L. I. marched out of Mhow on the 26th February 1874, the right wing or head-quarters having received orders to proceed to Mehidpur, and the left wing to Augur. At Dewas on the 1st March the wings separated, the right wing proceeding to Mehidpur *viâ* Oojein, and the left taking the road *viâ* Shájapore to Augur. Augur was reached on the 8th of March, since which date the wing has occcupied its present quarters.

Topography and Physical Geography.—Soil. 3. The station of Augur, Western Malwa, is situated in north latitute 23°43′ and east longitude 76°, and enjoys an elevation of some 1,600 feet above the sea level. Western Malwa consists of a tableland generally open and well cultivated, but varied in numerous localities by conical and table-crowned hills and low ridges, and is watered by numerous rivers and streams. The soil of Western Malwa is a loose, rich, black mould, frequently replaced by a more compact, ferruginous loam. In the immediate neighbourhood of Augur the latter predominates, the cantonments being built on ridges of cellular clay iron ore. The accompanying sketch of the cantonment will give a clearer conception of the general arrangements of the station than any detailed verbal description.

The only feature in the general arrangement of the cantonment calling for special notice is its proximity to the native city of Augur. This topographical feature has had important bearings on the health of the inhabitants of cantonments in former years, notably in the rainy season of 1869, when cholera raged with great severity in the native city of Augur. Vaccination has made but small progress hitherto throughout Western Malwa, and almost annually an epidemic of small-pox breaks out amongst the civil population of the native city. However, during the time the wing has occupied its present quarters there have fortunately been no cases of small-pox or cholera admitted into hospital, and the absence of small-pox must, no doubt, be attributed to the thorough system of vaccination which has been always enforced and is being carried on in the regiment.

Water and Drainage. The supply of water is abundant and of good qnality. The surface drainage of the cantonment is excellent.

Effects on Climate. 4. The climate of Augur, like most places in Western Malwa, is a very favourable one. Its elevation above the sea-level and its geological features, already noted, are, no doubt, the reasons of its being so salubrious. Even in the hottest months of the year— viz., in April, May, and June—there are very few oppressive hot nights experienced, a comparatively cool breeze always springing up a couple of hours after sunset. The prevailing wind during the year is westerly. During the past year the rains set in about the 9th of June and terminated about the middle of September. During this period rain fell on 57 days, and 45·71 inches were collected. This is about the normal rain-fall for Western Malwa.

Lines. 5. The map appended, shows the position of the lines, bazaar, neighbouring villages, and tanks. The drainage, as already stated, is purely surface, and is very good.

Each man living in the lines has 78 square feet of superficial area and 744 feet of cubic space. Ventilation is provided simply by the door-ways of the huts and the interspaces between the tiles of the roofs, and cannot, therefore, be very perfect.

Conservancy and Sanitary Arrangements.

6. The latrines are kept extremely cleanly. To the west of the regimental lines are the two permanently built latrines, one for men and the other for women. They answer their purpose well.

Water-supply.

7. Water is supplied by the different existing wells, and is abundant and of good quality. During the cold weather there is a depth of about 22 feet of water in the wells. The depth from the surface of the surrounding ground to the surface of the water is generally, in the cold season, about 32 feet. In the hot season of the year the water in the wells is about 42 feet from the surface, and in August and September, during the height of the rains, it rises to about 10 or 12 feet from the surface of the surrounding ground.

Food—Quality of, and whether abundant and cheap.

8. The food supplies in the Sudder Bazaar were of good quality and reasonably cheap. During the past year 14 seers of wheat were obtainable for 1 rupee, rice 8 seers, ghee 1¼ seers, dhall (túr) 10 seers, meat 6 seers, and milk 16 seers.

Clothing.

9. The clothing is of the same description as is supplied to all the native regiments in the Bombay Presidency, and is susceptible of much improvement. An ample native puggree would furnish a far better protection against the sun's rays than that afforded by the small cap supplied to the sepoys at present. The red-cloth tunic is much too warm for the hot season, and, as a rule, constricts the movements of the chest too much. The men would march much better in a well-made native shoe than they do at present in the ammunition-boot, and there would be far less admissions into hospital on account of "shoe-bite."

Duties and their Effect on Health.

10. The duties of the men since their arrival at Augur have consisted principally of the ordinary parades, musketry practice, and sentry work, and have had no prejudicial effects on the men's health.

Exercise, Amusement, and Occupation.

11. Some of the men take much interest in gymnastics.

Look-up Rooms and Cells.

12. The lock-up rooms and cells are situated in the quarter-guard, which consists of the following dimensions:—superficial area 576 square feet, and 3,050 feet of cubic space.

Marches.

13. Information under this head is supplied in para. 1.

Hospital and its Surroundings.

14. The hospital, a "*pucka*-built" tiled building, is situated on rising ground, and runs north and south, and, therefore, enjoys during most part of the year the westerly breeze. It has been built for the last two years, and is, consequently, in a very favourable state of repair. Cubic feet of hospital, 49,640; superficial, 1,460 feet.

Ventilation.

15. Ventilation is provided by 8 spacious doors and 6 windows, and in addition there are two ventilators in the roof of the building.

Over-crowding.

16. The hospital has been ample for all the sick of the regiment, and there has been no over-crowding.

Accommodation and Defects.

17. The accommodation is quite sufficient. No defects, and no improvements required.

Conservancy.

18. The hospital latrine is provided with four pans. The excreta are carried away and deposited in a pit outside and to the north of the cantonment.

Hospital Water-supply.

19. Close to the hospital is a large *pucka*-built well, which in all seasons of the year supplies an ample quantity of pure water.

Sickness, Mortality, and Invaliding, and Principal Causes of Sickness.

20. Three hundred and thirty-four men were admitted into hospital during the year. The principal diseases were intermittent fever, which gave 185 admissions; 24 men were admitted on account of contusions, principally caused by ill-fitting boots. Rheumatic affections caused 22 admissions. Three men only were admitted into hospital during the year on account of dysentery. Diarrhœa caused 4 admissions. Seven men were admitted on account of colic and 4 for syphilis. One man was admitted during the year on account of jaundice.

There were no deaths during the year. Twenty-six men were invalided during the year.

Influence of Rain-fall.

21. During the rainy season—viz., in June, July, August and September—the admissions into hospital were, respectively, 14, 31, 39, 52. In October the admissions rose as high as 72, and fell again in November to 29.

Vaccination and Re-vaccination.

22. Twenty-five children were vaccinated and 16 were re-vaccinated. All the children in the regiment bear marks of having been vaccinated. There has been no case of small-pox admitted into hospital during the year.

General Health and Physique of the Men.

23. The general health of the wing has been very good; and the physique of the men, taken on the whole, is good.

Treatment of Diseases when special.

24. The hypodermic injection of quinine was tried pretty extensively in the treatment of cases of ague, and proved on the whole rather successful.

Result of the whole.

25. It will be seen from a perusal of the above remarks that the wing, since its arrival at Augur, has enjoyed good health, and that the sanitary condition of the lines, cantonments, &c., has been very favourable.

How often Medical Pupils have been instructed during each week.

26. Having held only temporary medical charge of the wing since the 1st December, I am not in a position to state how often during the week the medical pupil has received instruction. Since my tenure of the appointment he has been frequently instructed in the elements of anatomy. Being obliged to attend ball practice, his attendance at the hospital in the mornings cannot be regularly secured.

H. M.'s 22nd Regiment N. I.

BARODA.—In medical charge of Surgeon-Major H. A. LEWIS; Strength 623.

Location and Movements.

The regiment left Neemuch by two wings for Baroda. The left wing marched on the 20th November, reaching its destination on the 23rd December 1873. The head-quarters, right wing, began its march on the 17th of January, and arrived at this station on the 19th of February 1874.

Topography and Physical Geography.

The cantonment of Baroda is situated in latitude 22° 16′ and longitude 73° 49′, on the B. B. and C. I. line of rail, 247 miles from Bombay and 62 from Ahmedabad. It is well wooded, flat, slightly undulating here and there, and consists of a sandy alluvium, with a sub-soil of clay. As it extends into the country beyond, it merges into a rich black cotton soil of great fertility. The country all around is highly cultivated with cereals of various sorts—jowari, mutt, bajri, &c. &c., and is well wooded with fine large trees, principally nim, tamarind, banyan, and mango, &c. To the extreme north of camp there is a magnificent "tope" of banyan and peepul trees. The river Vishwamittri is to the east. It takes its source from the Pangher Hill, distant about 35 miles from Baroda, and empties itself into the river Mahi. The water is used for ablutionary and sometimes for drinking purposes. In the year 1871 this river overflowed its banks, the water running a considerable dis-

tance inland. Drains and trenches have been made to carry off the surplus water during the rainy season ; but, owing to the nature of the sub-soil, the water has great difficulty in percolating through, so that pools may be seen here and there about the camp, which are a great source of malaria.

Effects on Climate.

The hot weather si extremely relaxing, and trying to both Europeans and natives. It commences about the 14th of April. The monsoon, this last year, commenced on the 4th of June and continued until September 5th, during which time 39·7 inches rain were gauged, which is a little above the average ain-fall. The cold weather began to be felt about the 19th of November.

The following table shows the temperature during the year :—

Months.	1873.		1874.	
	Maximum.	Minimum.	Maximum.	Minimum.
January	67·7	49·4	66·6	46·0
February	73·4	55·7	86·0	55·8
March	85·0	65·7	89·4	62·7
April	94·9	77·7	88·1	72·0
May	98·3	84·5	99·1	79·6
June	95·8	81·2	91·7	79·5
July	83·3	74·1	85·6	77·1
August...	80·2	72·3	83·2	75·4
September	79·1	69·4	86·4	75·6
October...	80·8	66·0	84·0	68·6
November	75·2	57·8	78·7	63·0
December	70·3	40·3	73·9	61·5
Average...	82·0	66·1	84·8	68·0

Lines.

The lines consist of ten rows of mud huts divided into four sections, running east and west. At each flank are the quarters for native officers. These lines, which were built more than twenty years ago, are now worn out, and totally unfit for the purpose. The walls are simply constructed of mud, with a single-tiled roof resting on rotten jungle-wood rafters, beneath which are cotton twigs. Each row is divided in the interior lengthways by a wall, so that the separate dwellings are back to back. Inside each there is total darkness, with little or no ventilation. The floor in some of the huts is on a lower level than the ground outside. The doors are very narrow.

The regimental bazaar is at the extreme right flank ; behind this are the store-rooms and school. The villages of Shama and Harni are about half a mile to the north-east of the lines. To the west of the camp there is a tank which is well filled during the monsoon months, and frequented chiefly by dhobies. Trenches are dug during the rains to carry off the surface water.

The latrines have been closed since the trench system was adopted here. The system was extremely unpopular amongst the men and women on their first arrival, but latterly the three trenches have been more frequented ; but many still go to the adjoining fields and nallahs. Each trench, which is about 13 feet long and 2 feet deep, is surrounded by matting spread on a framework of bamboo and placed on iron trestles. New trenches are dug every fourth day. The system I consider to be impracticable, as the space is limited. Several old trenches have already been re-opened many times ; moreover, the nearest well is distant only 150 yards from the line of trenches, and the water of the river Vishwamittri, which is drunk by some, is less than 100 yards distant.

Water-supply

The supply of drinking water is obtained from wells, of which there are four for the entire regiment. The quantity is sufficient, except in the hot weather. No complaints have been made as to the quality, but in all the wells the water contains more or less of chlorides. The mouths of the wells are properly protected from surface impurities near them.

Food, &c. Meat indifferent in quality and expensive. Vegetables are chiefly of the kind grown by the natives of the country, and are abundant and cheap. Europe vegetables are scarce.

Clothing. The red-serge coat and blue trousers are worn by the sepoys throughout the year when on duty. The head-dress consists of a forage cap with a red puggree. When off duty, and during the hot months, the white "meerjai" and "dhotee" are worn.

Duties, &c. Parades, drills, musketry practice, and guard-mounting. Such duties have no bad effect on health, except during the hot month, when at musketry practice several men fell out and come into hospital with fever and cephalalgia owing to the extreme heat.

Exercise, &c. Athletic and gymnastic games, chiefly by the Punjabis and recruits.

Lock-up Rooms and Cells. There are three cells in the quarter-guard, which is at a short distance from the lines The large one facing the north has had an additional window let into the walls, with great improvement as regards light and ventilation.

Marches. I marched with the head-quarter right wing of the regiment for Baroda, leaving Neemuch on the 17th January with only 7 sick. The weather at first was extremely cold and trying to the men, some of whom had several attacks of ague while at Neemuch, but very few admissions into hospital took place during the thirty-two days' march. The route was *viâ* Dohad and Godra through Mundasur, Jawra, and Rutlam. The road was extremely bad, and after leaving Rutlam it became nothing but cart-tracks. Several rivers were crossed.

Hospital and its Surroundings. The native regimental hospital is to the east end of the camp, about 600 yards distant from the lines. The building consists of one large ward running east and west, well lighted and ventilated by the doors roof, and windows, with accommodation for twenty-eight beds, and there is a verandah on each side. The walls are of burnt bricks, plastered over with mud, and chunam-pointed. The floor is of brick, the rafters are of teak wood, the roof is ventilated and double-tiled.

Over-crowding, None. There is a great want of accommodation for the native medical pupils, bheesties, and leechman. The dispensary is dark and ill ventilated. There is no dead-house.

Conservancy. The latrines, which are at a convenient distance from the hospital, are kept clean and free from smell by the use of McDougall's powder and solutions of carbolic acid.

Water-supply. The water supplied to the sick is obtained from a well situated near the hospital compound. The supply is sufficient, and its quality good.

Sickness, Mortality, and Invaliding. There were 1,130 admissions into hospital during the year from all causes—8 deaths 5 in and 3 out of hospital; and 20 men were invalided. Fever was the prevailing disease. There were 684 cases treated under that head, 678 of which were from ague occurring in men who had suffered, more or less severely, from it at Neemuch during the year 1873-74, and 60 from febricula.

In cases of ague I have found that one large dose of 10 grains of quinine, or three doses of 5 grains per diem, to be the best treatment during the intermission. The trial on the value of cinchonidine was commenced on the 1st December; the result will be hereafter reported.

Fifty-eight men came under treatment for muscular rheumatism. Sixty-eight for contusions, chiefly caused by wearing tight boots. There were 2 cases of acute dysentery and 3 of chronic hepatitis.

Under the head of cattarrhal ophthalmia 46 admissions took place. These men were attacked during the decline of the monsoon in July, and a few cases in the months of August, September and October. Bronchial cattarrhs were common during the cold months, when easterly winds prevailed.

There were 6 admissions from syphilis primary. Mercury in the form of Plummer's pills with tonics and good diet was the treatment adopted in all these cases, and no secondary symptoms have appeared in any of them. There were 2 cases of tertiary syphilis. The primary sores in both were contracted some years ago. There were 4 cases of guinea-worm treated in patients that had been previously treated for this parasite. A case of snake-bite occurred in a sepoy ; he was bitten by a " Foorsa " in the lines whilst he was asleep. The small wound was seen about two inches below the left nipple. About half an hour after the accident the patient rallied, but was very weak for some days. He was treated with ammonia, tonics, arrack &c. Two days after the bite there was extensive ecchymosis near and around the wound, blood oozed from the gums, and latterly he passed bloodly urine. He is now quite well.

Principal Causes of Sickness.

Malaria, which is chiefly owing to the nature of the sub-soil and the excessively moist and relaxing climate during hot and monsoon seasons of the year.

Principal Causes of Mortality.

There was one of remittent fever of a severe kind and one of intermittent fever ; bothf had chest complications, and occurred in debilitated subjects. One case of chronic bronchitis of long standing, one aneurism of the arch of the aorta. One case of acute pneumonia. One of chronic bronchitis, which occurred out of hospital while the man was on furlough.

There were 2 cases of suicide which occurred in the lines ; both were gun-shot wounds of the chest. Death was instantaneous from the sudden and profuse internal hœmorrhage in both cases, as seen in their *post-mortem* examinations.

Influence of Rain-fall.

There were 39·7 inches of rain gauged, being an amount a little above the average. The influence of this rain-fall was at the end of the monsoon ; sickness chiefly fevers and bowel complaints, increased.

Epidemics.

None, and there was no case of cholera.

Vaccination and Re-vaccination.

Re-vaccination none. There were 81 children successfully vaccinated. The lymph was always of good quality, and the practice of arm to arm vaccination was invariably adopted.

General Health and Physique of the Men.

Considering that the men suffered severely at Neemuch from ague during their three years' stay there, and the great number of admissions into hospital for the same complaints since their arrival, I think that, on the whole, the general health of the men to have been satisfactory and the " physique " of the majority to be good.

There is but one native medical pupil, whom I have examined on several occasions, but not weekly, which shall be done for the future.

Head-Quarters, 10th Regiment N. L. I.

MEHIDPUR.—In medical charge of Surgeon-Major T. MURRAY ; Strength, 389.

Location and Movement of Corps.

The head-quarters of the 10th Regiment N. L. I. has been stationed at Mehidpur upwards of nine months of the year, and was moved from Mhow to relieve the 25th Regiment N. L. I., which corps had been suffering so severely from fever and dengue that it was considered necessary by the military authorities to send it to a more healthy station for change.

Detachments.

The 10th Regiment N. L. I. accordingly marched from Mhow on the 26th February and while *en route* detached a wing to Augur, and reached this station on the 5th March 1874.

Topography and Physical Geography.

Mehidpur is in latitude 23°20′ N., longitude 75°35′ E., about 1,600 feet above the level of the sea, and is 73 miles distant from Mhow, 97 miles from Neemuch, and 30 miles to the south-west of Augur. It lies between the territories of Scindia and Holkar, and was formerly a large important military station, having been the head-quarters of the Mehidpur Contingent before it mutinied in 1857, and has since then been occupied by the head-quarters of a native infantry regiment. In consequence, however, of the prevalence of sickness at the place of late years it was proposed to reduce the number of troops and to locate the head-quarters of the regiment at Augur, and merely to keep a detachment of two companies here, but political and other considerations have rendered any change in the present arrangements inexpedient. The cantonment is about three miles in length, situated on a low tract of land below the level of the surrounding country, on the eastern bank of the river Sipra, and on the other side is nearly surrounded by a nallah, which separates the cantonment from the town of Mehidpur. The nallah receives a considerable portion of the drainage, and is filled from the river when at its height, and then occasionally overflows, and leaves a quantity of decayed vegetable matter on its banks. The soil consists of rich, black earth, retentive of moisture, and the surface generally is level, and affords no facilities for drainage. The strata are estimated approximately by the Engineer Department as composed of from 4 to 6 feet of black soil, spread on a layer of from 10 to 20 feet of yellow earth, and about 40 feet of moorum lying on rock, and the sub-soil water-line at about from 50 to 55 feet from the surface.

An examination of the returns, so far as available here, shows considerable increase of sickness as compared with that which prevailed ten years ago, as may be seen from the relative proportion of admissions on both periods :—

Years.	Strength.	Admissions.	Daily Sick.	Percentage of Admissions to Strength.	Years.	Strength.	Admissions.	Daily Sick.	Percentage of Admissions to Strength.
1864...	334	286	5	85·6	1870...	345	845	24	244·9
1865...	380	345	5	90·7	1871...	357	859	18	240·6
1866...	331	645	25	194·8	1872...	311	910	23	292·6
					1873...	337	1,435	44	425·8

This would seem to indicate some local cause, for it may be inferred that, as no very material change has occurred in the climate or physical conditions of the place, the insanitary character that it has acquired of late years may to a certain extent be attributable to some defective arrangement. This may be in some measure ascribed to the wretched damp state of the lines, which were built on black soil without any plinth, and which had fallen into a very bad state of repair. The walls were low, the roofs had large openings from decayed rafters, and the floors were below the ground-level, and remained in a permanently damp state for months, the water oozing from the grounds after heavy rains, and the houses generally were unfit for human habitation. To rectify this state of things, which must have evidently been no unimportant factor in the cause of sickness, considerable alterations had to be made, which, though pressed on, were scarcely quite completed before the monsoon came on. In addition to the requisite alterations, the lines were surveyed and levels taken with the view of instituting some improvement in drainage. Surface drains were made between each row of huts, and were met by other deep drains at the end of the lines at right angles, with a fall of 1 to 300 or 400 to carry off the water to the eastward. The level surface has afforded considerable difficulty to efficient drainage, and no systematic attempt of this nature has hitherto been made since the inundation of the place in 1857, when, owing to a bund having burst, the river and nallah overflowed and submerged a good part of camp, the water on that occasion having reached to several feet in the quarter-guard. The drainage has been confined to the lines, but so far as it has gone has proved a great improvement on the former condition of things, as was shown very clearly after a heavy fall of rain, when portions of the hospital compound were covered with water and the lines were comparatively dry, while water was running about 2 feet deep in the drains at the end of the lines. No doubt this added considerably to the comfort of the men, but a good deal more yet requires to be done to improve the salubrity of the place and lessen the swampy character of camp generally by an extended systematic scheme of drainage. At present, after heavy rain, the parade-ground, which is a large open space upwards of 700 × 500 yards, is partially covered with water to the south-east and west, which lodges until it disappears by evaporation, or soaks into the ground, and leaves numerous holes, which it makes, of 2 feet or more in depth. Since our arrival, considerable improvements have been effected in the place, which has now a very different appearance

from what it then presented, though such effortscould scarcely, perhaps, have been looked for from former regiments, when it was known that the abandonment of the station was under consideration. The roads in the cantonment have been thoroughly repaired and spread with moorum and rolled ; the one to the cavalry camp has been cleared and levelled. A new road has been constructed connecting two of the main roads, and another has been laid out to pass on through the babul plantation to the south, which has been largely thinned, and trees everywhere have been lopped, the lower branches trimmed to improve ventilation, and decayed trees cut down. The undergrowth and small trees along the river's bank have been cleared away. Trees of pipul, banyan, mango, sandalwood, and nim have been planted to fill up gaps in the avenue to the south of the parade-ground. The road to the cavalry camp as far as the nallah has been planted with mango and banyan trees on each side, and a new row has been completed of mango trees to the south of the lines. It may probably be here mentioned that an attempt on a small scale was made to grow the eucalyptus by the Commanding Officer at Málegaon, and one plant was brought from Bombay to this place, but the experiment proved a failure. It grew to the height of about 2 feet, and then died off from the heat which it seemed unable to stand.

Effects on Climate.

The climate, so far as our limited experience enables us to judge, is a good one, excepting in the hot season, in the rains occasionally, and at their termination, when it is sultry, close, and oppressive. In the second week in April after cloudy close weather there was a thunder-storm but no rain, and in the last week it was sultry, oppressive, with a good deal of electrical disturbance and a fall of 9 cents of rain. This continued, but no more rain fell in the month, and the whole register was 13 cents. In May it was sultry, with hot, dry, scorching easterly wind, with hot nights in the first third of the month, and after the 10th the wind shifted to the S. W., accompanied with electrical disturbance in the evening and afterwards varied from N.W. to W. Sixty-one cents of rain fell in the month. The monsoon set in mildly in the beginning of June with the usual cloudy sultry weather and electrical disturbance. It rained lightly on the 1st and 7th, and afterwards more frequently in the two following weeks. In the fourth week there was no rain from the 22nd to the 28th, but strong N. W. breeze prevailed, blowing fresh at times. The total fall in the month was only 4·68 inches. In July the weather continued fair up to the 11th, when, after a break of twelve days with more or less sultry weather, there was a fall of 2·75. It rained on the 15th and four successive days, and again on the 24th, after which it rained daily. The weather in the breaks was hot and muggy. The amount of rain registered in sixteen days was 11·56. The weather in August was dull and cloudy, with rain in fifteen days amounting to 15·12. The first week of September was cloudy, but it rained on only eight days, and on the 18th it became heavily overcast in the east, with lightning and thunder and a heavy fall of rain, which proved to be the end of the monsoon, for though electrical displays continued for some time afterwards there was no more rain. The total registered on the month was 3·83, bringing up the amount from the 1st June to 35·19. In October the weather was unusually fine and clear, and though hot in the day the mornings and evenings were pleasant and comparatively cool. In November and December the weather continued to be fine and clear, with dew in early morning generally, and light N.E., E., and S. E. winds in the day. The subjoined thermometrical observations were taken in the dispensary room from self-registering thermometers, as those recorded from other thermometers are not reliable and cannot be depended on :—

Abstract of Thermometer at Mehidpur in 1874.

Months.	Extreme Maximum.	Extreme Minimum.	Extreme Variation.	Mean Maximum.	Mean Minimum.	Mean Variation.	Rain-fall in 1872. 25th N.L.1.		Rain-fall in 1873. 25th N.L.1.		Rain-fall in 1874. 10th N.L.1.		Prevailing Winds
							Ins.	Cts.	Ins.	Cts.	Ins.	Cts.	
1874.													
January	..	..	..	..	..	..	1	21	..	..	..	..	
February	..	..	..	..	..	..	5	16	..	..	..	..	
March	96	58	38	89	69	20	..	..	..	03	..	..	W.S.W. to N.W. E. to N.E.
April	104	68	36	97	77	20	..	..	..	..	..	13	S.W. to N.W. N.E. to S.E.
May	104	80	24	100	84	16	..	14	..	..	..	61	N.E. to S.E. S.W. to N.W.
June	102	77	25	89	81	8	3	88	2	35	4	68	S.W. to W. S.E. to N.E.
July	94	74	20	86	78	8	4	47	12	42	11	56	S.W., W. N.W.
August	87	73	14	80	74	6	10	62	17	61	15	12	S.W., W. N.W.
September	90	73	17	85	77	8	16	48	2	75	3	83	S.W., W. N.E..
October	89	63	25	85	70	15	..	..	..	..	..	..	N.E., E.
November	87	55	32	79	60	19	..	20	..	..	..	..	N.E.
December	86	51	35	76	58	18	..	..	..	..	..	..	N.E. to S.E. N.W.
					Total....		42	16	35	16	35	93	

PLAN

OF THE

CANTONMENT

OF

MEHIDPUR

Scale 400 Yds to an Inch

0 100 200 400 600 800 1000 1200 Yds

A. Qr. Mr. Gel's Office, M.D.A.
Mhow; 23rd Octr 1874

(Sd.) A. G. Hayshe, Captain,
Dy. Asst. Qr. Mr. Gel, M.D.A.

FORT

TOWN OF MEHIDPUR

RIVER SIPRA

Goodursha's Temple

Cholera Camp

Well

Mess

Station Garden

Sudder Bazar

C.C.L.P.

Well

Well

L. Bazar

Mosque

Mosque

NATIVE HOUSES

Qr. Guard

C.L.P.

Gardens

CHURCH

Ruins

Ruins

Cemetery

C.L.P.

To Indor

Well

Ruins

Well

Gardens

Cavalry Lines in Ruins

Kurye Village

Tank

Temple

C.L.Pillar

Lines.

The lines were built by the 26th Punjab N. I. in 1868, when they occupied the station during the withdrawal of the Bombay troops for the Abyssinian expedition. They contain fifteen houses for native officers and non-commissioned staff, 38 huts for havildars, and 411 for sepoys and followers. They are constructed of burnt bricks set in mud, tiled, and are calculated to accommodate the head-quarters wing of a native infantry regiment, including lines for residence of followers and bazaar. The dimensions of the houses and huts are—native officers' houses, $16 \times 9, 6 \times 8{\cdot}6$; havildars', $12 \times 8 \times 7$; and privates, $10 \times 8 \times 7$. The native officers' houses have $5\frac{1}{2}$ feet verandah in front and rear, and the others $4\frac{3}{4}$ feet verandah in front, and the latter are rather small, especially for married men with families, and in their cases the huts are rather over-crowded. The lines are about 150 yards distant from the river, and are laid out from north to south in eight rows, each of which is divided into two blocks by a transverse street. They are built on black soil without any plinth, and have, in consequence of being on a level with the ground, proved very damp and unhealthy. An attempt has now been made to rectify this serious defect in their construction by raising the height of the walls 2 feet and the floors from 1 to $1\frac{1}{2}$ feet above the surrounding level, digging up the floors, and replacing the same with moorum and red earth well rammed together. This has rendered them much drier, and only one section showed any signs of dampness in the interior after heavy rain, and that seemed to come more from the walls than from the floors, through which the wet used to ooze formerly. The centre of the streets has been covered with moorum and sand, and the main drains have been bridged, so that the ground in the immediate vicinity of the huts has been as dry as could be, instead of being surrounded with mud. There is scarcely anything deserving the name of a bazaar in the cantonment, and the troops and residents are dependent for supplies on the town of Mehidpur, which is close to the camp, and is only separated by the nallah. Like the majority of native towns it is dirty and ill-regulated, and is surrounded by masses of prickly-pear, which flourishes in the vicinity in great luxuriance.

Conservancy and Sanitary Arrangements.

The trench system has been in use for upwards of three years on ground about 200 yards to the east of the lines. When the wind is westerly there is a little perceptible odour, but such cannot be affirmed when the wind is from the eastward in the hot season. In former years the experiment was reported on unfavourably by the Commanding Officer, who stated that the men and families did not like to use the place, and avoided it as much as they could, and that it was filthy, and in the rains, if not closely looked after, dangerous. In the monthly sanitary report it has been represented that the system is unsuited to this place, and has caused much discomfort to the men and families, who are naturally averse to frequenting the trenches in the monsoon, when the whole ground becomes soft mud, and cannot be walked on without the risk of sinking up to the ankles. After heavy rain, when the drains were running with 2 feet of water, the state of the trenches can be better imagined than described. There cannot be any reasonable doubt that the continuance of this system under such circumstances in this locality is conducive to the increase of sickness. At the commencement of the rains the moveable wooden shed that was used by the women became firmly stuck in the mud and had to be abandoned. It is highly desirable that permanent latrines should be erected without delay during the dry season, as has been done at Augur.

Water-supply.

The water-supply is derived from two regimental wells and one in the officers' mess compound, and from the river Sipra, on which, indeed, the principal dependence has been placed in the past year, owing to the drying up of the regimental wells in the hot season. The depth of the regimental wells is 57 feet and 60 feet, and that of the officers' mess 54 feet. The water in the wells is from 10 to 15 feet lower than the surface level of the river Sipra. The principal well was deepened 5 feet before the rains; but, as it did not fill readily after the monsoon, a reference was made to the Chief Engineer as to its further deepening and digging other surface wells near the river's bank, and sufficiently close to the stream so as to obtain natural filtration. The river Sipra is not at all seasons quite so free from contamination as could be desired. In the hot season the stream, is sluggish, and the water may then be considered at its maximum state of impurity; and in the rains, when the river rises, it becomes a fine stream of upwards of 120 yards in breadth with a strong current; it contains a large quantity of earthy matter in suspension together with other substances which are brought down as it scours the banks on either side. The river water has been used by the former regiments, and has hitherto been considered wholesome and of fairly good quality, and only in one instance was its use discontinued temporarily in the hot season of 1872 during the prevalence of cholera in the town and districts. The water in the principal regimental well and river was analysed at the end of the hot season, and after the rains in the beginning of the cold season, and, contrary to expectation, the river water was found to be less highly charged with mineral and organic impurities than the regimental well, whose springs from some cause seemed to have become temporarily obstructed, as it did not fill like the other wells, and after the rains had only 2 feet of water when the sample was taken, whereas it has now 6 feet, though no rain has fallen since. The constant movement of the

water in the river probably contributes to its purification, and this may be further aided by the presence of fresh-water plants in its bed. Previous to the receipt of the Chemical Analyser's report on the quality of the water, deepening the regimental well and supplementary surface wells near the river's bank had been advised by me with the view of obtaining a purer supply of water. Subjoined is the analysis of the composition of the samples :—

Analysis of Samples of Water from River ipra and principal Regimental Well taken on the 5th June and 20th October 1874·

	River Sipra, 5th June 1874.	Regimental Well, 5th June 1874.	River Sipra, 20th October 1874.	Regimental Well, 20th October 1874.
	Grs. per Gal.	Grs. per Gal.	Grs. per Gal.	Grs. per Gal.
Total solids dried at about 280° F.	34·16	43·40	26·32	45·08
Loss on ignition	7·0	3·64	0·56	1·12
Chlorine	3·472	3·472	1·56	2·95
Sulphuric acid	1·40	3·36	0·98	1·19
Lime	6·16	7·0	3·29	5·01
Magnesia	16·24	9·24	2·90	4·55
Silica	1·12	2·52	3·36	2·52
Combined carbonic acid	.....	.....	5·16	13·93
Potash	.....	.....	1·89	13·02
Soda	.....	.....	4·71	8·82
Hardness before boiling	15·05	12·67	7·00	5·95
„ after „	5·39	1·75	Permanent 1·40	1·05
„ removable	.....	.....	5·60	4·90
Ammonia.			Per Million.	Parts per Million.
In distillate from carbonate of soda	·0088	·0031	Free ·09	·45
In distillate from permanganate of potash	·0268	·0126	Albumenoid ·19	·25
Of nitrates and nitrites	·0520	·2310	·39	·33
Oxygen.			Grs. per Gal.	Grs. per Gal.
Total required by the water at 140 F. in presence of acid ...	·1358	·0350	·0875	·0770
Nitrous acid	.....	.....	·0320	·0402
Colour in stratum of 2 feet ...	Yellowish green.	Milky.	Opaque; cleared on standing	Yellowish white, clear.
Odour	None.	None.	Earthy.	Nil.
Taste	.....	Flat.	Do.	Very faint alkaline.
Re-action	Neutral.	Neutral, faintly alkaline after concentration.	Neutral.	Strongly alkaline after concentration.
Sediment	Abundant, dark-brown, flocculent, containing vegetable *debris*, paramecia, monads, and one or two rotifers.	Ash-coloured, consisting mostly of earthy matter. Infusoria almost absent.	Light-brown, sandy, mineral matter and vegetable *debris*. Rotifers and paramecia.	Large in quantity. Brownish-coloured, mostly vegetable *debris*. Crystals of carbonate of lime. Monads and paramecia

Food—Quality of, and whether abundant and cheap.

As previously stated, there is no cantonment bazaar, and residents in camp are dependent on the native town, where supplies are limited, and at times difficult to be had good, and vegetables are scarce. The ordinary articles of food are somewhat dearer here than they were at Mhow, but are cheaper than they were at Málegaon. The want of a good made road to Oojein isolates Mehidpur for some months of the year, and prevents the market from being fully supplied.

Clothing.

The clothing consists of a red-cloth coat and pair of blue-serge trousers, which are issued biennially by Government. The tunic, though adapted for full-dress displays, is not so well suited for fatigue or working duty as a loose serge patrol coat, which does not cramp the movements, and enables the men to go through greater exertion. This was found to be the case in Abyssinia, where each man received a loose serge patrol coat in which he could move with greater freedom; and, indeed, for about eight months, while on the way to and from Magdala, they wore nothing else, and in that time were daily employed in every kind of working party or fatigue duty. The men were unanimous in approval of the dress, and on return requested that it might be made a permanent one for guard and parade duty, offering to keep it up at their own cost, which request was not acceded to at army head-quarters, as it would have introduced a difference in the costume of regiments. The supply of boots to native troops is a question of some importance, and it is highly desirable that English-made boots should be supplied to the men in quarters as well as in the field. These articles are issued free to British soldiers, and it is advisable that this arrangement should be extended to native troops; but, if deemed inexpedient to provide them free, they should, at any rate, be allowed at prime cost, as boots made of country leather soon become unserviceable in wet weather, and even in dry do not last nearly so long, and with a view to efficiency it is necessary that this improvement should be no longer delayed. Until this is done, foot-sores will continue to be a source of inefficiency as hitherto. English-made boots are highly appreciated by the men, and can be made soft, and if necessary water-proof at a very trifling cost. They were worn by the men in a 3,000-miles march through Central India, when there was a smaller proportion of foot-sore cases than occurred in a wing of a native infantry regiment in a 14-mile march on relief from Indore to Mhow. Great-coats are good and serviceable. Recruit boys, however, have no great-coats; and since the monsoon orderly cloaks have been discontinued, they have been subjected to getting wet and to remaining wet for hours on duty.

Duties, and their Effect on Health.

The military duties have been lighter than at large stations. The men have had 8 nights in bed. The exercise has been regular, and consisted of from two or three hours daily in the drill season, and at other times there was parade for working for about three hours in the morning and evening. In the cold season there was marching out and manœuvring once a week.

Exercise, Amusement, and Occupation.

The amusements have consisted in athletic sports and games, which were got up in hot season and continued in the breaks of the rains and weekly holidays, and were varied from ordinary races to paper-chases across country. There has not been, however, much need of additional occupation for the men, for with school instruction and other duties they have been fairly well employed. Those who have had trades have been encouraged as much as possible in working at their respective handicrafts—as lithographing, book-binding, carpentry, tailoring, and shoemaking—when not on duty.

Lock-up Rooms and Cells.

The quarter-guard and solitary cells consist of one room and enclosed verandah and two cells. Their dimensions are $24 \times 12 \times 12$ and $10 \times 10 \times 12$ respectively. The quarter-guard is too small, and its walls are too low. It has been proposed to increase the height of the room 3 feet, and to throw one of the adjoining cells into the guard-room, as the guard have not room for their cots. This would necessitate the building of a solitary cell on the standard plan. The present cells are hot, badly ventilated, and unfit for solitary confinement. A store-room, ammunition, magazine, and armourer's shop have likewise been applied for, as the cells of arms at present used for the storage of tents, ammunition, and stores generally are not safe or fit for the purpose. Indeed, the station is ill supplied with public buildings, and it is with difficulty that several duties can be carried on, as there is no suitable place for tailor's, armourer's and shoemaker's work to be done.

Hospital and its Surroundings.

The hospital is built on a 2-feet plinth, and is situated about 60 yards to the north of the regimental lines. The form of the building is shown in a ground-plan sketch in the report of 1870. It consists of a single ward of $60 \times 18 \times 15\frac{1}{2}$ feet, which is estimated to contain 18 beds with 60 feet superficial area and 930 feet cubic space, or 20 beds with 54 and 837 feet respectively, and of a small verandah room, $18 \times 8 \times 9\frac{1}{2}$, in which two cots can be placed. The

building has a southerly instead of a westerly aspect, and is ventilated by four doors, two small windows, and five small apertures in the roof, which amount altogether to about one superficial foot.

Ventilation.

The ventilation is somewhat defective, and it is proposed to improve it by introducing ridge-ventilation in the roof.

Over-crowding.

In consequence of the increase of sickness in the rains there was unavoidable over-crowding, as the available accommodation was insufficient, though an 8-feet open verandah was fitted with chicks and mat frames and converted into a ward, and the regimental school-room was given over temporarily and used as an additional ward. A separate isolation ward has now been applied for.

Accommodation and Defects.

The only subsidiary buildings are a cook-room and a privy. There is no dead-house or quarters for the medical subordinates and hospital servants. The latter, however, have been sanctioned, and will be built in the course of the cold weather.

Conservancy.

The hospital conservancy arrangements are similar to what have been in use in the regiment previously. The latrines are supplied with dammered iron pans for the reception of the excreta, and iron vessels are placed outside for the fluids, and the privy floors and walls are thus prevented from being saturated with fœcal excreta, and the ground outside with urinous soakage. The contents of the vessels are removed daily, and the place is kept as clean as possible, and a deodorising solution of carbolic acid is employed regularly. This has been found more satisfactory than a half-and-half use of the dry-earth system.

Hospital Water-supply.

The water-supply is obtained from wells, either from the regimental one or from that in the officers' mess compound.

Sickness, Mortality, and Invaliding.

There were 997 admissions in the course of the year, of which 718 were from fever, an of which upwards of one-half occurred in the monsoon months when fever becomie rife on the setting in of the rains in June and was most frequent in July and September; while in th previous year it had been prevalent in August and September, and attained its maximum in October and November, being influenced evidently by the rain-fall of the different seasons. The disease soon after the commencement of the monsoon assumed an intermittent type, and was essentially malarious, accepting the theory that malaria is the product of decomposition of black soil by the combined action of heat and moisture. The form most frequent was quotidian, indicating a high degree of saturation of the system with poison, though it proved to be not in its most concentrated form, for the disease in no single instance passed into the remittent type, though such was met with regularly in former years. The disease was associated with considerable derangement of stomach and functional disorde of the liver, and in several cases there was a more or less deep icteric tinge of conjunctiva, and in a few malarious cachexy was slightly developed by repeated attacks of the disease, and in several there was splenic congestion, though the most marked case of that description the complication had originally been acquired in the Konkan, and was scarcely attributable to this locality. The complications were gastric, pulmonic, cerebral, and hepatic. The disease by its depressing effect produced a lowered tone of system and susceptibility to the influence of cold, which was clearly indicated in some instances by complaints of chilliness which did not correspond with the actual temperature, and the rigors were much less severe than were met with in the same form of disease in Sind, and were not so developed and prolonged as in the previous year, when they seem to have been of unusual severity. The prevalence of malarious disease of an aguish type is not difficult to account for after the description given of the physical configuration of this locality, and of the exhalation of water from the surface of black soil which it saturates after heavy rain in the monsoon; and it can scarcely be necessary to investigate at any length the other reasons assigned, such as variation of temperature, suppression of cutaneous secretion; as at Augur with a similar climate and with a large tank in its vicinity fever does not prevail to any considerable extent, but that station is built on red soil or laterite formation. As the occasion seemed favourable to notice the greater frequency or otherwise of fever at certain lunar phases, and as it seemed likely to be free from any disturbing element, the number of paroxysms was noted in the monsoon, and it showed an increase at the full moon, but a negative result at that of the new moon. The paroxysms at the full moon were in excess of the daily average during the four months but those at the new moon were not so, as two were above and two below the monthly average. The preventive measures adopted were—lightening the duty generally, discontinuing treasure escorts in the rains as much as possible, reducing the night guards to a minimum, and preventing men on duty from lying on the damp ground, provision of additional supply of quinine, and double the regulation allowance of warm clothing, which even then was insufficient. Attention was also paid to the men's food as far as practicable, and early application for treatment was enjoined. It was contemplated to give quinine as a prophylactic to men

before going on night guard, but this was not carried out, as the supply would have been hardly equal to meet the additional expenditure. The other principal admissions were 5 from phthisis, 32 respiratory disease, 3 dysentery, 23 diarrhœa, 1 scurvy, 2 hepatic, 1 splenic affection, 28 ophthalmia, and 27 rheumatism, &c., and scarcely require any lengthened notice, as their general character presented no special features which have not been already described in former reports. Probably, however, two instances of mental unsoundness may be briefly alluded to. One was received from the detachment at Indore at the beginning of the year, and was brought before a special invaliding committee at Mhow; the other occurred in a convalescent in hospital who suddenly became insane, and succeeded in evading the vigilance of his attendant, and proceeding to the lines removed the door of a comrade's hut in his absence, took his rifle, and loaded it deliberately, and shot himself. The diseasess amongst the European officers have been chiefly fever, and in one instance the affection wa- complicated with functional derangement of liver and lithemia. One case of slight con, cussion of brain was met with at the beginning of the year from a fall from horseback which was succeeded for some time by deficiency of sense of smell, but recovered and return- ed to duty. The daily average sick was 29·4, but that does not afford an estimate of the amount of sickness that was present in the monsoon, when there were 74 in July and 75 in October morning report.

Mortality.

No casualty occurred in hospital, and the only death that took place in the year was one from suicide while in a state of unsound mind.

Invaliding.

In the past year 64 men were invalided; of these 46 were from head-quarters and 18 from the left wing at Augur. The majority were under twenty years' service. Of these 37 had served both in Central India and Abyssinia, 2 in Central India, 24 in Abyssinia only, and 1 had no field service. The disability or cause of unfitness for further service was—in 3 phthisis, 10 bronchitis, 6 rheumatism, 1 splenic cachexy, 1 scrofulous disease of testicle and general cachexy, 1 asthma, 1 deafness, 1 leprosy, and 40 worn out from various causes, as impaired constitution, atrophy, length of service, &c.

Influence of Rain-fall.

The rain-fall had a very material influence on the amount of sickness in an undrained cantonment, and the period of sickness may be tolerably accu- rately estimated from the amount of rain-fall, the nature of the soil, and the configuration of the station.

Epidemics.

The station has been free from epidemic disease in the past year. Small-pox was present in the cantonment in 1870 and 1873, and cholera in 1872, dur- ing the time that these diseases prevailed in the town and district of Mehidpur. The site of the cholera camp is shown in the accompanying map, prepared in the Quarter-Master General's Office, M. D. A.

Vaccination and Re-vaccination.

In the course of the year 180 were vaccinated, embracing all the unprotected in the corps as far as could be ascertained; and as re-vaccination was systema- tically carried out in the two preceding years at Mhow, when 875 were re-vaccinated, amounting to 1,026 up to the present time, there was little left to be done to afford security against the disease.

General Health and Physique of the Men.

The physique of the men may be considered as rather above the average, as for upwards of twenty-five years much attention has been paid to maintain- ing the standard of chest measurement, which has never been deviated from in the instruction given to recruiting parties. A gymnasium has been kept up for many years, and the men have received every encourage- ment to attend it, and have competed with fair success at the annual assault of arms at Poona. Notwithstanding, however, the exertions of the regimental authorities, men below the standard have had to be taken into the ranks from time to time, and there is no ground whatever for doubt that the chest measurement and weight are now not equal to that of former years, though there exists no means of proving this point by figures. The present average chest measurement is 34 inches, weight 9 stone, and height 5 feet and $7\frac{1}{4}$ inches. One cause of the gradual falling off in physique, which may prevail to a greater or less extent in different corps, is the passing recruit boys into the ranks whose muscular and osseous systems are not developed, and who would be likely to succumb to the hardships of active service. It would be preferable probably to extend the period of enlistment of regimental lads who are not up to the stand- ard of physical fitness, as at present on attaining 17 years they have either to be enlisted or discharged. In the course of the year, 73 recruits joined the regiment. The recruiting par- ties still represent that there is difficulty in procuring the same stamp of men as formerly. This is accounted for by the greater attractions of the labour-market, prices having risen every- where, and, moreover, it is evident that the service is not now so popular or so much sought after; as the terms have continued stationary, while the training and drill, since the introduction

of arms of precision, have become more trying, and require greater staying powers, activity, an intelligence than formerly.

Upon the whole, then, there has been a perceptible decrease of sickness as contrasted with the preceding year. This will be most clearly seen from the subjoined abstract of the two years' admissions, and it may be fairly inferred that the exertions made by the regiment, since its arrival, in draining and rendering the lines habitable, have not been altogether without effect in contributing to this result:—

	1873. 25th N.L.I.	1874. 10th N.L.I.
Average strength of head-quarters at Mehidpur ...	337	389
Admissions	1,435	997
Daily average sick	44·29	29·4
Percentage of admissions to strength	425·81	256·3

Instruction of Medical Pupils.

The native medical pupil has been instructed twice a week in practical therapeutics from Waring, and in materia medica from Squire and Thorawgood, &c., and in addition to dispensing has been employed in assisting to prepare the hospital returns, in which he has shown aptitude.

Detachments, H. M.'s 16th N. I. and 25th N. L. I.

INDORE.—In medical charge of Surgeon GOLDSMITH ; Strength, 194.

Location and Movements of Corps.

1. The corps stationed at Indore at present consists of the left half battalion, H. M.'s 25th Regiment N. L. I.

Detachments.

2. The wing arrived at Indore early in August last on detachment duty of six months, relieving the left half battalion, H. M.'s 16th Regiment N. I. which had been stationed here since February of this year. The native infantry wing furnishes no small detachment to any neighbouring camp or town. The detachment at present in Indore will be relieved early in January 1875.

Topography, &c.

3. Indore is situated on a tableland formed by the Vindhya range of mountains, at about 12 miles from the summit of the "Ghâts" and in the south-east corner of the province of Málwa. A few spurs of the Vindhyas run to within a comparatively short distance of Indore. The height of the canton ment of Indore is rather over 1,800 feet above sea-level. From this height, taken as th summit of the tableland, the whole country slopes gradually downwards towards the directio of Nasirábad and Gwalior, and forms the water-shed of the chief portion of Central Indi The general aspect of the country is that of an undulating plain. There are no rivers a importance within fifteen miles of Indore. The drainage of the cantonment and of to native city of Indore is carried off by two small streams which originate from some spurs of to Vindhyas, and which eventually join either the Chumbul or the Sipri in their course towahi the Jumna and Ganges. The actual natural drainage of the cantonment is good, as ifei situated on slightly higher ground than that immediately surrounding it; and even atss heavy falls of rain, during the south-west monsoon, the ground becomes in a very short spetl of time dry and free from surface water. The soil is almost entirely the black cotton soe derived from disintegrated black trap, which absorbs and retains a large quantity of water.

Effects on Climate.

4. The climate is remarkably good, owing to the elevation of the land above the sea. level and its proximity to the edge of the "Ghâts," from whic, clear pure air passes over the cantonment. The hot season is mild ; the hot breeze, prevalent during the months of April and May, commences about 10 A.M. and dies away usually by 6 P.M., leaving the nights cool. In the cold season the thermometer often registers 32° F., and ice is found in gurrahs outside the bungalows. The rains are pleasant, extending from about the middle of June till the end of September ; the rainfall averaging about 35 inches. The coolness of the nights during the hot season and also during the cold weather seems to depend on the presence of the black cotton soil, which extracts heat from the air and absorbs a great portion of its moisture.

5. The lines occupied by the native troops are situated about two miles from the native city. They consist of five rows of huts, built on plinths of sun-burnt bricks, with tiled roofs. They are capable of accommodating 200 men. The houses for the native officers are six in number, and are situated to the left (west) of the men's lines, and are built of *pucka* bricks. The bazaar is about half a mile from the lines, in a well-situated and clean locality. There are no villages in the immediate neighbourhood of the lines. To the south-west is a small village, Baungunga, and to the east one, called Kujeana, both over three miles from the cantonment. The drainage used is natural, the position of the men's lines being itself than the higher ground immediately surrounding it. There are no tanks in the vicinity of the lines.

Lines, &c.

6. The latrines are situated about 120 yards in a north-easterly direction from the lines. There are 18 pans for the men and 10 for women. The soil is removed and buried in pits about 30 yards beyond the latrines.

Conservancy.

7. The water-supply is furnished from two wells in the vicinity of the lines. They are both good wells as regards the quantity and quality of the water-supply; the water contains a slightly larger proportion of lime than is present in perfectly pure waters, but not to any extent that renders it injurious.

Water-supply.

8. The food which is obtained in the bazaar is good, but the prices, on the whole, are rather higher than in many other stations in the Presidency.

Food.

9. The clothing of the men always appears to me unsuited to them—the dress of the irregular corps, such as the Deoli Force, appearing really to be far more suited to native infantry soldiers than the present dress in vogue. It is impossible to say anything favourable of clothing which appears utterly at variance with the climate, and which imposes such restraint on the actions of the limbs.

Clothing.

10. The duties of this detachment are lighter than at head-quarters. There is only one large guard at night over the jail. On the whole the men get 4½ to 5 nights in bed during the week. The drill season determines the amount of parade work, musketry, &c., and both during this season and the hot weather and rains the work in a measure depends on the Officer Commanding the wing here. I think the duties are lighter than at Mhow.

Duties and their Effect on Health.

11. Amongst the men of the 16th N. I. there were a good many sportsmen. This was their only pastime. I never see much wrestling or feats of strength being performed near the lines. The men of the 25th N. L. I. do not sport much; a few of them are cricketers, and have played with the Indore Club.

Exercise, &c.

12. The hospital was completed in 1873, and was described in the annual report for 1874. In proximity to it are, as separate buildings, a dead-house, a cooking room, latrines, hospital assistant's quarters, and quarters for 2nd class hospital establishment.

Hospital.

13. The ventilation of the hospital is natural—four doors opening into the ward, which is constructed to hold eight patients. The admissions have been so few, since I have been in medical charge, that there has never been any difficulty from over-crowding.

Ventilation.

14. The only improvement which has been sanctioned lately, has been the construction of a bath-room from one of the side rooms, and the sanction of the baths (not yet supplied) one for Hindus and one for Mussulmans.

Accommodation, &c.

15. The soil is removed to the pits used for the soil removed from the lines by the hospital sweepers, having been previously disinfected with carbolic acid and McDougall's powder.

Conservancy.

16. The water-supply is from a well within a few yards of the hospital, the supply is plentiful, and the quantity is good.

Water-supply.

17. The left half battalion, 25th Regiment N. L. I., relieved the left half battalion of the 16th Regiment N. I. early in August.

Sickness, Mortality, &c.

Only one death occurred, which was amongst the Konkanis.

The 16th Regiment furnished the detachment here from the commencement of the year until August last. The strength of the detachment was 105—commissioned officers, non-commissioned officers, and men.

The preponderance of febris intermittens over other causes of sickness is very marked. The detachment 16th N. I. was here during the two first months of the monsoon, and this may have increased the admissions; whilst the 25th detachment had only recently come from Mehidpur and Augur, where fever prevailed to a great extent in the regiment.

Mortality according to Race.

18. The only death that occurred in the 16th detachment was that caused by the bite of a snake (*bungarus cœrulens*) in the lines. Amongst the 25th detachment there was only one, from fatty heart, occurring in a Konkani.

Influence of Rain-fall.

19. The average rain-fall at Indore is about 35 inches. This year there fell 36 inches during the month of July, when the rains were heaviest. The lines were in a bad sanitary condition. As regards the drainage of the surface water, so much rain fell within so short a time that the usual channels and drains for leading the water off the lines were insufficient, and this could scarcely be remedied during the height of the monsoon. Since then it has been rectified.

Epidemics.

20. There have been no epidemics amongst the troops, nor in the native city of Indore this year.

Vaccination and Re-vaccination.

21. Vaccination is conducted by the vaccinator of the district, who attends hospital when there are children to be vaccinated, and the supply of lymph is obtained through him.

General Health and Physique

22. The general health of the two detachments has been, in comparison with that of the head-quarters of each regiment (numerically almost equal), very good. The physique of the detachment of the 16th Regiment N. I. was good; they were apparently better men than the 25th N. L. I., but lately the 16th Regiment has had "good" stations—Ahmednagar and Mhow, whilst the 25th N. L. I. were in Abyssinia, Dhulia, and Mehidpur. At the latter station ague prevailed very extensively, and the general physique of the men must have been affected by these causes.

Treatment of Disease when special.

The number of admissions and patients treated scarcely admitted of any special treatment being followed out to an extent which could be said to be beneficial or otherwise.

The only treatment which has been carried out with very good results, and about which there seems to be no two questions, is that of the hypodermic injection of quinine in malarious fevers. The ordinary dose is 4 grains of the neutral sulphate of quinine injected after being dissolved in 20 to 30 minims of water at a temperature of 100 F. I have never seen any sloughing of the skin where the syringe was introduced, and the Civil Surgeon here (Dr. Beaumont) has not seen an authenticated case of sloughing amongst upwards of 5,000 administrations. This preparation, on account of the small doses required, seems, on the whole, cheaper (to say the least worthy virtue it possesses) and more efficacious than other preparations of quinine or cinchona alkaloids.

The remaining number of sick has been far too small to allow of any scope for experiments, or special modes of treatment. There has been no case of suppurative diseases of the liver, nor any case of dysentery which has assumed alarming symptoms. The dysentery cases as they occurred, were treated in the usual way.

REPORT ON THE NORTHERN AND MHOW DIVISIONS OF THE ARMY.

By Deputy Surgeon-General D. WYLLIE, M.D.

The native troops within this circle of inspection, for the year, comprised one company of native artillery, two regiments of cavalry, and twelve of infantry. The aggregate daily strength of all arms was 8,362 (as against 8,450 in 1873), composed of 6,790 Hindus, 1,329 Mahomedans, 129 Christians, 92 Jews, and 22 others; and of the total, 4,755 were stationed in the Northern and 3,607 in the Mhow Division, as below shown :—

Divisions.	Stations.	Corps.	Average of present Strength.	Total.
Northern Division.	Ahmedabad	3rd Regiment N. L. I.	642	
		9th do. N. I.	637	
		Detachment at Sádra (Furnished by 3rd and 9th Regiments alternately)	75	
	Deesa	2nd Regiment L. C	257	
		18th do. N. I.	620	
	Rájkote	1st Company, Native Artillery	133	
		Squadron, 2nd Regiment L. C.	136	
		Head-quarters, 7th Regiment N. I.	324	
		28th Regiment N. I.	475	
		Detachment, 28th and 7th Regiments N. I. at Dwárka	86	
		Detachment, 28th and 7th Regiments N. I. at Barda Chowki	79	
	Bhuj	11th Regiment N. I.	668	
	Baroda	22nd do. N. I.	623·5	
		Total of Northern Division		4,755
Mhow Division.	Mhow	16th Regiment N. I.	528	
		25th do. N. L. I.	528	
	Indore	Native Details. (Furnished by the 16th and 25th Regiments alternately.)	194	
	Mehidpur	Head-quarters, 10th Regiment N. L. I.	389	
	Augur	Left Wing, 10th Regiment N. L. I.	206	
	Neemuch	3rd Regiment L. C.	302	
		24th do. N. I.	646	
	Nasirabad	Squadron, 3rd Regiment L. C.	127	
		23rd Regiment N. L. I.	687	
		Total of Mhow Division		3,607
		Total of both Divisions	...	8,362

The squadrons of the 2nd and 3rd Light Cavalry at Rájkote and Nasirábad, as well as the detachments 28th Regiment at Dwárka and Barda Chowki, are relieved annually, the details at Indore every six months, and the detachment at Sádra monthly.

The annual reliefs were accomplished early in the year, the last having been completed on the 16th of March. The men were thus all in quarters before the setting in of the hot season.

The movements involved were as follows:—

1st Company, Native Artillery, from Aden to Rájkote to relieve 2nd Company.					
10th Regiment	from	Mhow to Mehidpur and Augur	do.	25th	Regiment.
11th	do.	Satara to Bhuj	do.	20th	do.
18th	do.	Rájkote to Deesa	do.	24th	do.
22nd	do.	Neemuch to Baroda	do.	4th	do.
24th	do.	Deesa to Neemuch	do.	22nd	do.
25th	do.	Mehidpur and Augur to Mhow	do.	10th	do.
28th	do.	Sholapur to Rájkote	do.	18th	do.

Of the seven corps that thus stood fast, the 2nd and 3rd Cavalry have been at their present stations for four years; the 3rd, 9th, 16th, and 23rd Regiments for three years; and the 7th for two years.

The total of admissions in hospital was 12,426, which, added to 270 remaining at the beginning of the year, gives an aggregate of 12,696 treated, or a ratio of 151·83 per cent. of average strength. The deaths within the year were 53, or 0·63 to strength.

A comparison of these figures with corresponding results in 1873 shows the favourable feature of a reduction in the number of treated to strength, equal to 17·26 per cent. The year was thus comparatively favourable to health, although the deaths were a fraction higher. The 10th, 18th, and 24th Regiments, together with the 3rd Light Cavarly, were exceptional in not participating in this sanitary improvement, each of these corps exhibiting an increase of admissions (as compared with previous year) ascribed to change of station and a larger rain-fall than ordinary:—

Years.	Average Strength.	Total Treated.	Deaths.	Percentage of Treated to Strength.	Percentage of Deaths to Strength.	Percentage of Deaths to Treated.
1874	8,362	12,696	53	151·83	0·63	0·42
1873	8,450	12,767	52	169·48	0·61	0·40

The Mhow Division is less healthy than the northern in a higher incidence of ague, pull monary disease, and rheumatism—matters accounted for in the character of its soil and climate; and of the different stations, Mehidpur, from natural defects of drainage, continues to be the most insanitary, the treated there being 261·9 per cent. to strength. Bhuj (11th Regiment), on the other hand, was the most healthy, and singularly exceptional in a ratio of only 56·4, or less than half that of any other regiment.

The better health obtaining in the Northern Division generally) (Baroda excepted) will be seen in the ratios of treated and of deaths in the different cantonments, as exhibited in the margin. It is to be added, however, that it is only in the autumnal and cold months at most that this relative sanitary superiority is observed. The artillery and carvaly, as usual, were more healthy than the infantry in respect of finer physique and, possibly lighter duties.

Stations.	Average Strength.	Percentage of Treated to Strength.	Percentage of Deaths to Strength.	Daily Average No. of Sick.
Mehidpur	389	261·9	...	29·4
Neemuch	948	197·8	0·95	56·6
Mhow	1,056	199·51	0·57	71·4
Augur	206	162·1	...	13·2
Nasirábad	814	132·5	0·85	27·1
Indore	194	97·9	1·03	3·7
Baroda	623	185·2	0·80	32·7
Deesa	877	152·7	0·91	38·9
Rájkote...	1,068	125·4	0·47	2·1
Ahmedabad	1,279	103·3	0·31	41·5
Bhuj	668	56·4	0·74	14·0
Dwárka...	86	182·5	...	4·7
Barda Chowki	79	449·3	2·52	10·0
Sádra...	75	65·3	...	0·9

Malarious fever, notably ague, is the most common disease of the sepoy, and while chiefl prevalent in the autumnal months it is still a prominent feature in hospital practice at all seasons. It accounted for 50·78 per cent. of the entire admissions; and, although seldom otherwise than of passing account, still in its proneness to recurrence it not infrequently leads to continued inefficiency, and to conditions of permanent ill-health resulting in invaliding.

So far as the cantonments situated on alluvial soil are concerned, it is susceptible of proof that marked ameliorations in the occurrence and severity of this disease have resulted since first occupancy, and, as I believe even, within the last vingesimal period, in respect of drainage and attention to local sanitation. But there are other stations, not so favoured, in which the proximity of a sub-soil retentive of storm-waters defeats efforts in the former direction.

There can be no question that the incidence of this ailment is favoured, in the instance of native soldiers, by the wretched character of the accommodation they in most cases occupy, its want of cubic capacity, the low floors (ever damp in the rains), and too often dilapidated roofs; and that much might be done in mitigation by improvement of the men's huts and providing them with well-raised plinths.

The cases under this head ranged from a minimum of 26·53 per cent. of total treated in the 11th Regiment at Bhuj to 64·22 in the 24th at Neemuch (excluding the small detachment at Barda Chowki, where the figure was even higher); and in an aggregate of 53 deaths from all causes, 7, or 13·2 per cent., are returned from this cause. Sulphate of cinchonidine has been undergoing trial in treatment at the different hospitals for some three months past; but so far results are not promising, its efficacy as an antiperiodic being computed at less than half that of quinine.

The other remittent type was comparatively rare 23 only having been treated— the cases, with some four exceptions, occurring at Guzerat stations. Four deaths resulted, and were confined to that province.

As a class, malarious fevers accounted for a little above half the total treated from all causes, giving a ratio of 50·6 per cent. to 47·5 in 1873, the increase being explained by a larger rain-fall.

Continued fever figures prominently in the returns of the 10th, 25th, and 22nd Regiments, the total treated from this cause being 338. There was no mortality; and, as the cases are only passingly alluded to in the hospital reports, it may be inferred that they were either of ephemeral character or of little account.

Diseases of the stomach and bowels exhibit an increase in 754 treated as against 697 in the previous year. The 23rd and 24th Regiments returned the largest number. Ailments of this class are common in the rains and cold months, and dampness of the huts is reasonably assigned as a predisposing cause. However formidable in civil practice, they rarely influence mortality to any material degree in the case of native troops—timely recognition going far to insure remedy, and thus of 202 treated for dysentery only 1 death resulted.

Bronchitis, Pneumonia

Diseases of the respiratory system also compare unfavourably with the previous year, in 635 treated to a total of 538 in 1873. The admissions under this head were, relatively, more numerous in the 24th and 25th Regiments; and full three-fourths of the aggregate were attributable to bronchitis, the mortality being only 3. Pneumonia, on the other hand, accounted for 10 deaths, not a high proportion (in 35 treated), ordinary circumstances and results regarded; for the disease is essentially insidious in natives of weakened vitality, and the cases are thus, as a rule, advanced before any treatment is applied for.

Rheumatism gave 694 against 646 in previous year, the 18th and 16th Regiments being conspicuous in contributing—the former 86, the latter 94. The average incidence to total treated was equal to 5·47 per cent., or nearly 2 per cent. higher than among the indigent sick of the civil population, and, as applied to a selected body of men who have had no hardships to undergo, it is undoubtedly in excess, even allowing for the occasional presence of scorbutic or syphilitic taints as factors. The facility with which it is simulated, and the difficulties of detection where semi-starvation has been adopted as a preparative, render it a favourite resource with the sepoy contemplating invaliding; and till the pension rules be modified, and the men's huts improved, this opprobrium of our hospitals is not likely to be confined to reasonable limits. One death was returned in the 11th Regiment in a man of syphilitic diathesis.

Syphilitic affections were represented by 147, the relative figures for 1873 being 111. The greater half were cases of secondary disease, and among the primary the Hunterian sore appears to have been comparatively rare. But while the general ratio of occurrence to strength shows an increase of 0·29 per cent. for the year, the disease has decreased at stations where lock-hospitals are established, as will be noticed further on.

Of scurvy 72 were treated, to 78 in the previous year—the 3rd Regiment accounting for nearly half the number. While seldom so pronounced as to render admission necessary, it is still common in its incipient stages, particularly among men from the Konkan, in connection with stint in diet and concurrent low vitality. The presence of this taint in the 16th Regiment was reported in October, and on inspecting the men on the 8th of January I found there were some 180 showing symptoms, 70 of them well marked. Dr. Kiernander had, however, taken all needful measures, and the disease was then declining. The condition, however, of this regiment suggests the advisability of change of station when the relief season comes round. The 25th Regiment only showed a small percentage affected, and relatively but slightly; one death, however, occurred in this corps. Vegetables of the common kind appear to be comparatively dear at Mhow, a matter that will be reverted to. The 9th Regiment also exhibits the taint to a considerable extent—some 10 per cent. presenting symptoms, although few in any marked degree. The other corps inspected, were satisfactorily free.

Diseases of the eye, mostly conjunctivitis, gave less than their customary average; the treated being 454, that for the previous year 473.

The troops at Ahmedabad, Deesa, and Baroda contributed by far the greater part, that disease being common over the alluvial tracts of Guzerat in the soft sultry weather intervening in the monsoon, when it sometimes has the force and spread of an epidemic; and at that season the cases are rarely otherwise than of malarious origin.

The mortality shows an increase of 1 death as compared with the number in 1873, but its ratio to strength was almost identical. Some exceptional accidents tended to swell the list in past year. Thus, there is a casualty returned under each of the heads of jackal-bite, snake-bite, and salivation. Of a total of 53 deaths, 34 have been incidentally noticed in the above remarks. The remainder are accounted for in 4 of phthisis pulmonalis, 3 hepatic diseases, and 3 each of the circulatory and nervous systems; while small-pox, abscess, stricture, fracture, and amputation contributed 1 each. There is nothing in the list to require comment, since in none of the classes of disease was the mortality otherwise than moderate.

There was no epidemic throughout; but a few isolated cases of small-pox, mostly, as it would appear, modified, occurred in the Mhow Division and at Ahmedabad and Rájkote. The admissions, however, were only 22 in all, with but 1 death—facts significant of the completeness of protection obtaining among the troops; since the disease was, as usual, prevalent in an epidemic form, during the early part of the year, alike in Rajputana and in Málwa.

Vaccination has been carried on with more or less success in all the corps—the 10th, 11th, 16th, and 25th Regiments being especially notable in numbers; and an aggregate of 1,009 primary operations were performed, showing an excess of 273 over those of the previous year. Re-vaccination, on the other hand, has largely declined, the total being only 591 to 1,896 in 1873. The assigned cause of decrease is simply the fact that there appears to be very few of the men not already protected; and personal enquiry, particularly directed to this point, satisfies me that the explanation is valid, and that there has been no want of diligence in carrying out the measure when opportunity has offered.

Classed by country, the natives of the Deccan were, relatively, less healthy than the other sections, as shown in the following table :—

	Konkanis.	Hindustanis.	Deccanis.	Punjaubis.	Goanese.	Guzerathis.	Others.	Total.
Aggregate strength	4,269	1,981	1,225	424	63	104	296	8,362
Total treated	6,647	2,866	2,059	620	93	89	322	12,696
Percentage of treated to strength	155·70	144·67	168·80	146·23	147·62	85·58	108·78	151·82

The Konkan element, as will be observed, came next to the Deccani in a high percentage of treated to strength, and in all probability on field service would be found to take the first place (at least such has been my experience); for, although docile and well-conducted beyond others, they have less stamina as a class.

The total invalided was 509, of whom the six regiments in the Mhow Command contributed 327, and the larger force in the Northern Division only 182. The number ranged from a minimum of 11 in the 28th Regiment to 83 in the 25th, the mean ratio being 6·01 per cent. of strength. The chief causes of unfitness are given in the margin; old age and debility—of all the most prominent—accounting for 38·50 per cent. of the total, rheumatic affections 15·12, diseases of the lungs 13·55, of the stomach and intestines 4·12, and malarious fevers 3·72; the two first-named causes figuring largely in the instance of the 25th, 16th and 24th, the three corps which gave the largest number of invalids.

Old age and debility	... 196
Rheumatic affections	... 77
Diseases of the lungs	... 69
Do. of the stomach and intestines	... 21
Malarious fevers	... 19
Syphilitic affections	... 15
Diseases of the eye	... 15
Scorbutic affections	... 13
All other diseases	... 84
	Total... 509

Returns of length of service have not been supplied for the men of the 11th Regiment, as they appeared before a committee in Bombay. Excluding them, therefore, from the aggregate, it appears that considerably more then half the total number were men whose period of service was between 15 and 20 years, as marginally shown. This is but the natural result of a recognised defect in the present rules—the fact that they offer no increment of pension between 15 and 40 years' service—a matter that tempts to malingering (when there is no prospect of promotion), as soon as the qualifying period is attained. There are some general remarks on this subject in the report of the 9th Regiment which are apposite and appear well considered. Modifications of the conditions of enlistment and pension are certainly desirable, and it would be well if this could be made a means of bringing a better class of recruits into the ranks than seem now to be generally attainable.

Under 15 years... ...	27
Between 15 and 20 years.	286
Do. 20 „ 30 „	123
Do. 30 „ 40 „	56
Over 40 years... ...	3
Total...	495

It is generally accepted among those who have had opportunity for adequate observation, that the recruits now obtainable are no longer equal in physique to the class of men enlisted in by-gone years, and I had some reason to realize this on recently inspecting a regiment with which I had formerly been long associated. Surgeon-Major Murray, 10th Regiment, who in respect of a very lengthened experience is well able to speak, mentions that, notwithstanding the exertions of recruiting parties, men are now taken into the ranks whose chest measurement is below the standard that for upwards of twenty-five years has guided enlistment in his regiment. The Medical Officers of the 9th and 25th Regiments also pointedly speak to the inferiority of the recruits now obtainable, and no doubt such is the case generally. But at the same time the fact of there being certain regiments long noted for fine physique, and still maintaining that superiority, would suggest that recruiting may not always be pursued in the best fields; and it will be easily understood that an original mistake in this direction would be very likely to be perpetuated. From my own point of view I would prefer to see more Mahrattas of the hardy hill population in the ranks, as a class better fitted than the other components for the fatigues and privations of a campaign. No doubt, however, the service has not the same attractions as formerly—a difference, perhaps, sufficiently explained in the smaller purchasing power of money and the general increase of wages that has concurrently followed.

The matter of enlisting recruit lads is also one that claims consideration, there being few corps that have not some weedy representatives of this class, taken on perchance under the fallacious expectancy of "filling out" on improved pay. Dr. Murray, referring to the existing rule under which such lads must either be enlisted or discharged on attaining the age of 17, thinks the period should in certain cases be extended. This would be a step in the right direction. But, having regard to the fact that it is prejudicial to efficiency to admit lads or very young men before "growth be completed, and the constitution formed," the age for enlistment requires to be materially postponed.

Among more tangible defects as conducing to sickness, the condition of the men's huts is the most notable. Ordinarily dilapidated and of inadequate cubic capacity, without plinths or any proper means of ventilation or light, it is hard to believe they can be otherwise than prejudicial to health; and the Medical Officers of the stations visited have been generally unanimous in ascribing to the insanitary influences of defective accommodation much of the obtaining predisposition towards ague, rheumatism, and pulmonary diseases. The cubic space, while only 405 at Bhuj, seldom exceeds 700 feet; and when it is remembered that almost a third of the men have families, implying in their case nearly four individuals on a mean to each hut, the absolute inadequacy of room will be obvious; and were it not that the roof tiles are sufficiently open to admit of some renewal of air, they would be altogether uninhabitable. The want of plinths is also a serious defect, giving rise to dampness in the rains and its incident evils; particularly, as is not infrequently the case, when the floors are below the ground level. The best are those recently built at Râjkot by the 18th Regiment (now occupied by the 28th), combining, as they do, the desiderata of adequate space—1,350 cubic feet—for single sepoy and 1,650 for family men, with raised plinths; and judging by the plans (for which I am indebted to Colonel Coombe) these huts fully meet all requirements, and might be accepted as models for future structures of the kind.

Water-supply at most of the stations is abundant and esteemed of fair quality. The cantonment wells of Ahmedabad have been recently analysed on the spot by Surgeon-Major Boustead, who characterises its quality as that of a "fairly good, hard, potable water," and the results are set forth in his accompanying report. Those of Deesa and Mhow are at present being examined by Surgeons Barry and Kiernander, and the water of the other stations will in turn be subjected to chemical scrutiny. The supply is least satisfactory at Nasirabad, where the scarcity of good water has long been a ground of complaint, the cantonment wells being all more or less saline, some of them little better than brine springs, according to the analysis of the late of Dr. May. This defect involves the cost and incovenience of bringing drinking water for the troops from a distance of three miles. Measures, however, are now in progress to impound water in the neighbouring Aravelli Hills, in view to providing the cantonment with pure water by gravitation.

At Mhow there is a general scarcity in the summer months, and a good deal of the supply appears of doubtful character, enteric fever having been traced to one of the wells. At Bhuj the wells in the lines are saline, but sweet water is obtainable at a distance of half a mile.

The wells at Mehidpur are exceptional, furnishing a very inadequate supply, while the quality is indifferent from excess of solids. The troops mostly draw from the neighbouring river (Sipra), which affords better water, although containing a notable excess of organic matter in the summer months.

The drainage of the different cantonments is surface and sufficient, the natural slope of the occupied ground being adequate for the discharge of storm waters, excepting at Indore and at Mhow, where, owing to want of fall, trenching is necessary; and at Mehidpur, where the condition is altogether exceptional. There the surface at best is a dead flat, and being lower than the adjacent river-bank some of it is partially hollow, leading to large accumulations of water in the rains. Much has been done to remedy these natural defects as well as to improve the men's dwellings since the arrival of the 10th Regiment N.L.I., and health has correspondingly improved. But more remains for accomplishment, the deeply fissured surface of the black soil showing that the ground in the vicinity of the men's quarters and hospital must have been under water for some time.

As respects sewage, there is no provision anywhere for its removal. Refuse water is simply thrown out of doors, to soak and dry, or permitted to drain out through a hole in the hut wall (doubtless fulfilling the purposes of a sink) to taint and soil the neighbouring earth. Thus in the lapse of years the ground in occupancy becomes saturated with sewage, and sooner or later adjacent wells give evidence of pollution. Dr. Barry has just communicated that he finds the supply of the wells in the 18th Lines at Deesa to be very impure, that on quantitative examination the albumenoid ammonia (which Dr. Parkes says should not exceed ·007 grains per gallon) is found to be ·023 grains, and that the matters dissipated by heat, which, the same authority says, should not exceed 3 grains per gallon, are found to be as high as 7 grains. These and other results of examination are conclusive of contamination; and as the lines are old and dilapidated, and must soon be rebuilt, a fresh site should be chosen, the present one having been inhabited for more than fifty years.

It appears unnecessary to discuss the question of clothing; for, while it is conceded that a style of dress, better adapted for natives and probably more conducive to comfort and efficiency, could be readily devised, still the prestige of the present uniform will doubtless enable it to withstand innovation—short of recognised necessity, and no such grounds for alteration have been made out. There is, however, one article of equipment—the ammunition-boot—that presses for improvement, answerable, as it is, for a large proportion of the admissions that figure under the heads of ulcer and contusion, and probably for half the cases of inefficiency that ordinarily occur on the line of march. It is obvious, however, that no radical change could be made—existing dress regarded—without producing incongruity, and any modification should, therefore, be limited to improving the present article. I entirely concur with the suggestion made by Surgeon-Major Murray, that sepoys should be supplied with English-made boots on the same terms as they are issued to the British soldiers.

The fact cited by him, that the men of his regiment wearing such boots in a march of 3,000 miles in Central India had "a smaller proportion of foot-sore cases than occurred in a wing of native infantry in a 14-mile march on relief from Indor to Mhow," appears to me to be all conclusive as to the desirability of such change; but I am of opinion that two pairs of socks should also be added to the kit of every native soldier.

There are gymnasia in the 2nd Cavalry, 10th, 11th, 22nd, and 23rd Regiments, and athletic games are more or less practised in the other corps, although not organized. Trades are likewise pursued to some extent, particularly by the men of the 7th, 10th, and 24th; and school instruction also seems to be followed. It would appear, however, that the intervals of leisure are mostly passed in an aimless fashion. Gardening would furnish a fitting recreation where conditions are favouring, and at Mhow in particular it might be made a useful auxiliary in the promotion of health. In a communication just received, Surgeon-Major Thorold (Staff Surgeon) informs me "that the Cantonment Committee will be prepared to grant excellent ground close to the infantry trench latrines with the use of a well on the ground," if the regimental authorities consider it desirable. And in regard of the large number of cases of scorbutus in the 16th Regiment (some of the 25th being also affected), and the comparative dearness of the commoner sorts of vegetables, which by the priced list before me are full a third higher than at Ahmedabad, I am persuaded that this suggestion of sepoy gardens at that station well deserves the consideration of the authorities concerned.

Excepting at Neemuch and Augur, where rocky ground or want of room renders it impracticable, the trench latrine system has been in force, more or less, in all the cantonments in the majority throughout the whole year, but in a few discontinued during the rains when the

permanent masonry latrines are had recourse to. The measure is unpopular, as I have had ample reason to realize. This is scarcely to be wondered at—considerations of conveniency and decency regarded, and on all hands an anxious wish for permanent latrines has been expressed.

The system, moreover, is one not free from danger, alike as regards the contingency of water-pollution as from the risks of deleterious hydrogenous emanations acting as blood-poisons, of which some warning experience was afforded in one of our jails only nine years ago. The various Medical Officers with whom I have conversed, have been unanimous in expressing disapproval of existing arrangements. Some complain of the stench, particularly in the rains; others refer to the fact that men will often prefer to wander far rather than use the trench. In the report of the 9th Regiment it is mentioned that "the me do not like it, the women hate it, they consider it an indelicate arrangement, and they avoid using the trenches as much as they can; privacy is impossible." That of the 10th Regiment states that "men and females did not like to use the place, and avoided it as much as they could;" that it was "filthy, and in the rains, if not closely looked after, dangerous." And Surgeon Heffernan, 25th Regiment, who mentions that he has watched its working both at Mhow and Mehidpur for three years, regards it as "a filthy, degrading, and dangerous system."

On the whole the objections are such as seem to press for change; and, all things regarded I would advise that permanent latrines be reverted to (already done in the 3rd Regiment) as the better and safer arrangement—the more so that in several of the stations, notably those of Guzerat, the nature of the soil is manifestly unsuitable, being little better than siliceous sand, and thus deficient alike in deodorizing and in resolving qualities.

The subject of sub-soil water-level (and its variations) is one that engaged attention during my tour as possibly having more relation to the occurrence of malarious diseases than is generally recognised. Unfortunately the data at present available are too vague to build upon, but I have invited the co-operation of Medical Officers at the different stations in view to reliable measurements of wells being periodically made and recorded. At present it is sufficient to say that, as respects the alluvial tract of Guzerat where the drainage is directly towards the sea, it would appear that the variations in level between the extremes for the year (May and September) range from 6 to 9 feet. Observations made here with Pettenkoffer's apparatus from 1870 to 1873 show that the water begins to rise some time before any rain occurs, and this circumstance, with its comparatively small fall in summer, suggests that the wells are sustained during that season by under-ground currents, in all probability fed by the melting snow of the Himalayan ranges. Meanwhile it may be mentioned that observations made at the various dispensary towns justify the conclusion that the incidence of ague is directly proportioned to the nearness of the sub-soil water to the surface, the difference of 2 or 3 feet in level being reflected in the sick returns of these institutions, and doubtless the same relation holds good as respects the military stations.

In Meywár and Málwa, on the other hand, the drainage is essentially different; all the water from the eastern slopes of Aravulli, Udeypur, and surrounding hills determining in the Chumbul—Mhow being exceptional in half its rain-fall finding its way to that river and half to the Nerbudda. Geologically the whole region is of trap formation, with occasionally superimposed laterite and marl; and of the many wells examined, all appeared to me to be dependent on a purely local limited supply. The water-level thus undergoes comparatively great variation in the course of the year, ranging from 24 feet at Mhow to 30 or more at Neemuch—rising in most to within 14 feet of the ground-surface in August, and at the latter station to within 6 feet or less, particularly when the rain-fall happens, as in last year, to be heavy. It remains for future observation to show how far connection may exist between the prevalence of autumnal ague at these stations and the proximity of the sub-soil water. It is probable, however, that such a relation will be distinctly established, unless at the insalubrious station of Mehidpur, where the prevalence of malaria appears due to a sub-soil retentive of storm-waters underlying the black surface soil at a depth of a few feet, the wells there being lowest in the monsoon months.

The hospitals are all in good repair, and sufficiently large in every case to meet ordinary requirements. There was adequate and fitting accommodation throughout, except at Mehidpur, where a neighbouring school-room was for a time made available for sick. Those in the Northern Division, with their comparatively low ridges and brick or earthen floors, appear to me better adapted for natives than the lofty, open-roofed, Bengal standard plan and flagged floors (generally adopted in the Mhow Division), which are complained of as being chilly and comfortless in the cold weather. At Neemuch only are the buildings otherwise than of special construction; and there barracks, formerly occupied by Europeans, are used, which sufficiently fulfil all purposes, now that their excessive ventilation has been curtailed. Separate contagious wards are required at Ahmedabad, Baroda and Rájkot, as well as for the cavalry at Deesa.

Latrines are generally satisfactory, dry-earth and McDougall's powder being in common use. Matters of detail, however, are not carried out uniformly; circumstances of construction, &c., influencing arrangements. In some, ordinary pans are used, liquid sewage being received in suitable vessels sunk outside, or, as observed in two instances, left to drain away—a defect already represented for remedy. In others the pans are partitioned, and in a few, two separate vessels are employed. The best kept latrine of those inspected, is, perhaps, that of the hospital, 3rd Regiment N.L.I., where this last plan is adopted. The excreta are removed twice daily, and in every case sufficiently far; the only complaint on this head being at Rájkote, where, owing to the distances involved, the conservancy cart is mentioned as inadequate for the prompt discharge of the service required.

Two of the latrines are in objectionable proximity to the hospital wells, that of the staff at Mhow being but 18 feet distant, and that of 7th Regiment at Rájkot only separated from the well by a narrow drain. In the case of the first mentioned, recent analysis shows that the water is contaminated by sewage, although not as yet to any considerable extent. Dr. Thorold has, however, taken the prudent precaution of having the latrine floor dug up and relaid by fresh materials in mitigation of the evil, and the result will be narrowly watched. But the better remedy would be to change the site of both latrines.

Dead-houses are required at Ahmedabad, Rájkot, Baroda, and Mehidpur, and should be supplied without delay, not only on grounds of decency, but also as essentially necessary to enable Medical Officers to conduct *post-mortem* examinations with care and accuracy. The accommodation provided should be complete in requisite appliances. Two rooms of the kind recently constructed at Mhow were found to be without any articles of equipment whatever, and the floors were left unmade.

Out-offices are more or less incomplete at the four last-named stations, requiring additions to quarters, &c., of establishment for better efficiency. But these matters are not of such pressing importance. A cook-room should, however, be provided for the 18th Hospital at Deesa without loss of time.

There are four medical staff charges which render separate returns of sick, viz., those of Mhow, Ahmedabad, Neemuch, and Nasirábad The first and second have distinct hospitals, the others have no separate accommodation, the sick being treated in the regimental hospitals. At Mhow only is the appointment of Staff Surgeon a special one, the charge there being large and important. The patients comprise lascars, followers, and departmental employés, together with bazaar residents; the latter, however, are mostly treated as out-door patients.

At Neemuch, owing to its remoteness from any other aid, cases of urgency and of surgical operation among the district population frequently come under treatment, and the same is the case occasionally at Mhow, both institutions thus serving in some degree as civil hospitals, and in the case of the former more particularly it is matter for regret that the means at Dr. McDowall's disposal for this purpose are so very limited.

The aggregate treated is given below:—

	Average Strength.	Total Treated.	Death.		Average Daily Number of Sick.
			In Hospital.	Out of Hospital.	
Mhow	1,094	389	7	1	12·9
Ahmedabad	1,158	68	2	...	2·9
Neemuch	391	242	2	2	7·5
Nasirabad	301	103	...	...	1·67
Total...	2,944	802	11	3	24·97

the strength shown being exclusive of bazaar residents, of whom no returns are kept, the record of out-patients being limited to women and children, European and native, of whom a total of 866 of the former received medical aid and of the latter 1,184.

The prevailing diseases in the staff charges were almost identical with those of the troops ague accounting for 448 in a total of 802 treated. Guinea-worm, injuries, and dysentery, however, were more largely represented, the latter particularly in the Mhow charge. The cases are usually of more severe type than are met with in ordinary practice, from reluctance of the patients to come to hospital till absolutely necessitated.

Of a total of 14 deaths (3 of them out of hospital) 5 happened from pulmonary disease, 2 were suicides; and splenitis, ozœna, apoplexy, old age, and hydrophobia accounted for the others—symptoms in the latter case appearing after an interval of five months.

The Mhow Hospital, although improved during the past year, is defective alike as respects site, construction, and want of accommodation for European sick; and as the cantonment is large, and the community rapidly expanding, while there is neither a civil nor native general hospital at the station, I fully concur with the local authorities in thinking that it would be better to construct a suitable cantonment hospital, adapted for all classes, rather than waste means in supplementing existing accommodation in a locality already sufficiently crowded, and, moreover, out of the way.

Something also is required to be done at Neemuch to meet the needs of the indigent sick of the district who throw themselves on our humanity. A small separate ward should be provided for their treatment, with such service as circumstances may call for, and some provision of clothing also furnished for the use of the strictly necessitous.

Lock-hospitals.

There are five institutions of this kind, in which an aggregate of 1,041 cases were admitted in an average daily strength of 263·53 registered women; the corresponding figures for1873 being 808 and 236.

	Average Number on Register.	Admissions in Hospital.
Ahmedabad	64·59	65
Deesa	33·80	278
Mhow	81·90	474
Neemuch	25·20	97
Nasirábad	58·05	127
Total ...	263·54	1,041

This increase, however, is partly explained by the exceptionally large number shown "as under observation."

The buildings are generally suitable, the sites in every case judiciously selected, and the out-offices adequate. That at Mhow has been enlarged during the year, and is by far the most complete hospital of the sort in this circle, alike in respect of accommodatien and organization. At Ahmedabad the women are temporarily housed in a ward of the staff hospital, pending the construction of a new roof.

The number reported for non-attendance at the periodical examinations was very small at Nasirábad, Neemuch, and Deesa, being only 4, 6, and 8 respectively. At Mhow it was 87, and at Ahmedabad as high as 377—an unfavourable feature, the comparatively small strength regarded.

The prevailing ailments were leucorrhœa, which accounted for 385, gonorrhœa 291, and syphilis 218 cases. Under each of these heads there is some increase as compared with the previous year—most marked, however, in respect of the second. No death occurred throughout. The incidence of disease was highest at Deesa, equalling 831·36 per cent. of strength, next at Mhow, and least at Ahmedabad.

From the hospital reports generally it would appear that the object of these institutions is mainly defeated by non-registered women who practise prostitution surreptitiously, and are the chief agents in disseminating disease. This class is partly composed of those who manage to evade ragistration by living under nominal protection, but mostly by residents of neighbouring villages to whom the rules do not apply. This is more particularly the case at Neemuch and Mhow, where the area of registration is restricted to cantonment limits, it not being considered desirable, as Dr. Thorold mentions, to adopt the 3-mile radius for stations situated in foreign territory.

Still, notwithstanding obstacles, there is satisfactory evidence that benefit is resulting in the circumstance that disease has decreased among the native troops in four of the cantonments concerned, from an aggregate of 164 (syphilis 105, gonorrhœa 59) in 1873 to 105 cases in the past year, of which only 58 were syphilis. Neemuch aloue is exceptional in showing an increase which amounted to 16. Whether a corresponding result was noticed among the

European troops does not appear. At Deesa they are said to have been comparatively free; at Nasirábad it is mentioned they "did not suffer much," while the Mhow report states that the average number under treatment for veneral affections was 4·62, that for 1873 being 3·80.

My inspection tour at this date (February 25th) has extended to all the military stations in both divisions, excepting Bhuj and Rájkot, which will be visited early next month. The distances involved being far, and only to be got over by road, the time spent at the different stations has necessarily been restricted to what was essentially required for the immediate purposes of inspection. Nevertheless, although somewhat hurried, it has been sufficient to enable me to become acquainted with the different Medical Officers subordinate to my office, and to realize that each and all are discharging their duties with fidelity and acceptancy.

It appears superfluous to enter on individual details in respect of the different stations, since these are minutely noted in the reports of the respective executive officers. The above remarks have thus been directed to matters of general importance, rather than to a recital of facts already sufficiently dealt with elsewhere; while it is hoped that no point deserving of special notice has been overlooked.

I beg leave to commend, in particular, the careful and well-considered report of Surgeon-Major Murray, 10th Regiment N. L. I. Those also of Surgeon-Major Thorold, on the Staff and Lock-hospitals, Mhow; of Surgeon-Major Boustead, 9th Regiment, N. I.; and of Surgeon Heffernan, 25th Regiment N. L. I., merit my commendation.

Returns of sickness and mortality according to classes of disease and station are appended to this report.

STATEMENT.

GENERAL RETURN of Sickness and Mortality in the Native Troops ing to Classes

Corps.	Stations.	Average Strength.	Average Daily Number of Sick.	General Diseases.																				Diseases of the Nervous System, 59 to 104.		Insanity, 105 to 110.	
				Sub-Division A.										Sub Division B.													
				Fever.																							
				Eruptive, 1 to 5.		Continued, 6 to 14.		Malarious, 15 and 16.		Malignant Cholera, 18.		Other Diseases of this class.		Rheumatic Affections, 34 to 42		Syphilitic Affections, 43.		Scorbutic Affections, 54.		Dropsies, 57.		Other Diseases of this class.					
				Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
2nd Regiment L. C.	Deesa	257	10·9	..	..	..	..	90	1	..	..	..	..	16	..	13	..	..	..	..	..	..	..	5	1	..	..
Sqr. 2nd do. do.	Rájkote	136	3·5	..	..	..	..	61	..	..	..	..	..	12	..	..	..	..	..	..	..	1	..	1	..	2	..
3rd Regiment L. C.	Neemuch	302	15·6	2	1	..	..	273	..	..	..	1	..	20	..	8	..	2	..	..	..	2	..	2	..	..	..
Sqr. do. do.	Nasirábad	127	1·7	1	..	..	..	86	..	..	..	..	..	11	..	..	..	..	..	..	..	..	..	3	..	..	..
1st Company, N. A.	Rájkote	133	3·4	2	..	2	..	70	..	..	..	..	..	8	..	2	..	..	..	..	..	..	..	1	..	2	
3rd Regiment N. L. I.	Ahmedabad	642	26·0	8	..	..	..	384	..	..	..	1	..	45	..	28	..	34	..	..	..	3	1	3	1	1	..
Detachment, 3rd Regiment N. L. I.	Sádra	25	0·0	..	..	1	..	15	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	..	..
Hd.-qrs. 7th do. N. I.	Rájkote	317	8·8	..	..	..	..	243	1	..	..	4	..	11	..	2	..	1	..	..	..	1	..	3	..	..	..
Detachment, 7th do. do.	Dwárka	72	0·4	..	..	..	..	14	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
Do. 7th do. do.	Porebunder	7·40	1·2	..	..	..	..	30	..	..	..	..	..	5	..	..	..	1	..	..	..	..	..	..	..	..	..
9th Regiment N. I.	Ahmedabad	637	15·5	4	..	..	..	195	..	..	..	..	..	14	..	1	..	4	..	..	..	4	..	1	..	..	..
Detachment, 9th Regiment N. I.	Sádra	50	0·2	..	.	..	..	16	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Hd.-qrs. 10th do. N. L. I.	Mehidpur	366	27·7	..	..	153	.	571	.	..	..	..	..	26	..	9	..	1	..	..	..	..	..	4	..	1	..
Left Wing, 10th do. do.	Augur	206	13·2	..	..	..	..	185	.	..	..	..	..	22	..	4	..	2	..	..	..	2	..	2	..	..	..
11th Regiment N. I.	Bhuj	668	14·0	..	..	11	..	104	1	..	..	..	..	22	1	6	..	..	..	..	..	1	..	2	..	..	..
16th do. do.	Mhow	528	38·2	7	..	3	..	369	..	..	..	2	..	84	..	10	..	1	..	..	..	2	1	7	..	..	..
18th do. do.	Deesa	620	28·0	1	.	14	..	548	1	..	..	..	..	86	..	13	..	10	..	..	..	7	1	17	..	1	..
22nd do. do.	Baroda	623	32·7	..	..	60	.	690	2	..	..	..	..	65	..	11	..	1	..	..	..	..	..	3	..	..	..
23rd do. N. L. I.	Nasirábad	687	25·4	9	..	..	..	446	1	..	..	1	..	62		1	..	6	..	..	..	12	..	10	..	..	..
24th do. N. I.	Neemuch	646	41·0	3	..	1	..	885	3	.	..	6	..	28	..	12	..	6	..	1	.	2	..	11	1	..	..
25th do. N. L. I.	Mhow	472	30·0	8	..	92	..	418	..	..	..	..	..	43	..	5	..	3	1	..	..	1	..	1	..	..	..
Left Wing, 25th do. do.	Augur	56	3·2	55	..	1	..	31	..	..	..	..	..	22	..	1	..	..	..	..	..	..	..	..	..	..	..
28th Regiment N. I.	Rájkote	475	15·2	7	..	..	..	341	..	..	..	2	..	49	..	16	.	..	..	..	..	7	..	4	..	..	..
Detachment, 28th Regt. N. I.	Dwárka	79·05	4·3	4	..	..	..	58	..	..	..	3	..	17	..	..	..	..	..	..	..	2	..	2	..	1	.
Do. 28th do. do.	Barda Chowki	78·8	10·0	..	..	..	..	307	1	..	..	..	..	2	..	..	..	..	..	..	..	1	..	1	..	..	..
Native Details.	Indore	217	5·4	5	..	..	..	106	..	..	..	..	..	23	..	5	..	..	..	..	..	..	..	1	..	1	..
	Total..	8,362	376·2	116	1	338	..	6,536	11	..	..	20	..	694	1	147	..	72	1	1	..	49	..	84	3	9	..
	Total for the year 1873..	7,533	347·9	69	..	681	..	6,902	9	..	..	8	..	646	1	111	..	78	..	..	..	29	..	89	4	8	..

stationed in the Northern and Mhow Divisions for the Year 1874, *accord-*
of Diseases.

Local Diseases.																																		Injuries.									
Diseases of the Eye, 111 to 185.		Diseases of the Heart, 219 to 224 and 250 to 258.		Diseases of the Lungs, 290 to 337.		Diseases of the Stomach and Intestines 449 to 500.						Diseases of the Livers, 501 to 520.		Diseases of the Spleen, 524 to 530.		Gonorrhœa, 585 to 594.		Abscess, 819, and elsewhere according to site.		Ulcer, 859.		Skin Diseases, 827 to 901.		Other Diseases of this class.		Old Age and Debility, 904 and 905.		Poisons, 906 to 991.		Injuries, 992 to 1146; and Blistered Feet, 1148.		Punishment, 1147.		Surgical Operations.		Total.	
						Diarrœha.		Dysentery.		Others.																															
Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.	Treated.	Died.
22	..	3	..	13	1	2	..	12	..	15	..	3	..	3	..	5	..	2	..	5	..	17	..	10	1	..	..	..	..	50	..	2	..	..	..	288	4
1	..	2	..	1	..	1	..	4	..	6	..	1	..	..	..	1	..	..	..	2	..	6	..	2	..	..	..	..	..	16	..	..	..	..	..	120	..
18	..	3	..	22	1	1	..	5	..	2	..	4	1	1	..	7	..	..	..	9	..	41	..	16	..	..	..	..	..	72	..	..	..	..	..	511	3
5	..	..	..	2	..	2	..	2	..	7	..	..	..	..	..	..	..	..	..	2	..	16	..	4	..	..	..	1	..	24	..	..	..	..	..	166	..
3	..	1	..	8	..	6	..	2	..	13	..	1	..	..	..	1	..	2	..	..	..	9	..	3	..	..	..	..	..	22	..	..	..	..	..	158	..
68	..	5	..	46	..	4	..	25	..	24	..	2	..	4	..	5	..	3	..	1	..	68	..	40	..	32	..	..	..	84	..	..	..	..	..	918	2
1	..	1	..	4	..	..	..	3	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	28	..
17	..	..	..	8	1	6	..	9	..	9	..	1	..	1	..	2	..	..	..	1	..	15	..	18	..	..	..	1	..	23	..	..	..	2	..	378	2
..	..	..	..	..	..	1	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	21	..
..	..	..	..	2	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	1	..	..	..	..	..	43	..
34	..	..	..	22	2	2	..	15	..	5	..	..	..	1	..	3	..	4	..	15	..	30	..	8	..	1	..	..	..	39	..	..	..	1	..	403	2
..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	21	..
28	..	..	..	40	..	23	..	3	..	3	..	2	..	1	..	6	..	6	..	5	..	24	..	23	..	1	..	..	..	33	..	..	..	..	..	963	..
15	..	..	..	16	..	4	..	3	..	12	..	1	..	3	..	5	..	1	..	..	..	15	..	5	..	2	..	..	..	34	..	..	..	1	..	334	..
10	..	1	..	17	1	12	..	18	..	17	..	3	..	3	..	8	..	11	..	16	..	37	..	26	1	3	..	1	..	48	1	..	..	..	..	377	5
32	..	1	..	68	..	19	..	15	..	26	..	..	..	4	..	16	..	2	1	6	..	102	..	40	..	37	..	..	..	173	..	..	..	..	..	1,026	2
67	..	4	..	61	..	17	..	9	..	14	..	7	..	8	..	5	..	3	..	5	..	38	..	51	..	7	..	1	..	56	..	3	..	1	..	1,051	4
49	..	1	1	30	2	23	..	2	..	22	..	3	..	6	..	13	..	9	..	4	..	51	..	21	..	3	..	1	..	83	..	3	..	..	..	1,154	5
13	..	1	1	51	4	33	..	8	..	36	..	9	1	15	..	10	..	5	..	36	..	62	..	30	..	..	..	1	..	56	..	..	..	..	..	913	7
15	..	..	..	108	2	16	..	13	..	36	..	10	..	10	..	6	..	2	..	5	..	51	..	54	..	1	..	..	..	82	..	..	..	..	..	1,364	6
22	..	1	..	67	2	6	..	17	..	39	..	..	..	7	..	7	..	..	..	3	..	45	..	16	..	7	..	..	..	134	..	..	..	..	..	942	3
3	..	..	..	1	..	..	..	..	..	5	..	2	1	..	..	..	..	..	..	..	..	6	..	2	..	..	..	..	..	10	..	..	..	..	..	139	1
20	..	3	..	29	1	4	..	20	1	26	..	1	..	3	..	8	..	3	..	8	..	16	..	15	..	1	..	..	..	56	..	..	..	2	1	641	3
5	..	..	..	5	..	3	..	4	..	7	..	..	..	1	..	2	..	6	..	..	..	7	..	3	..	..	..	..	..	6	..	..	..	..	..	136	..
1	..	..	..	1	..	6	..	3	..	9	..	..	..	..	..	..	..	..	..	3	..	3	..	7	..	1	..	2	1	8	..	..	..	..	..	355	2
5	..	1	1	8	..	6	..	9	..	16	..	..	..	1	..	6	..	3	..	4	..	19	..	8	..	..	..	2	1	17	..	..	..	..	..	246	2
454	..	28	3	630	17	200	..	202	1	352	..	50	3	72	..	116	..	63	1	131	..	679	..	401	2	96	..	10	2	1,131	1	5	..	7	1	12,696	53
473	..	15	2	538	17	236	1	188	2	273	1	33	1	48	2	80	..	108	..	128	..	606	..	335	3	48	1	7	..	1,027	3	1	..	2	..	12,767	47

GENERAL RETURN of Sickness and Mortality in the Native Troops stationed in the Northern and Mhow Divisions for the Year 1874, according to Station.

Stations.	Corps.	Strength.		Remained.	Admitted.	Total.	Discharged.	Died.	Remaining.	Percentage.		
		Europeans.	Natives.							Treated to Strength.	Deaths to Strength.	Deaths to Treated.
Ahmedabad	3rd Regiment N. L. I. ...	5	642	25	893	918	896	2	20	143·0	0·3	0·2
	9th do. N. I.	7	637	7	396	403	386	2	15	63·3	0·3	0·5
Deesa	2nd do. L. C.	5	257	6	282	288	275	4	9	112·1	1·5	1·4
	18th do. N. I.	7	620	23	1,028	1,051	1,024	4	23	109·5	0·6	0·4
Baroda	22nd do. N. I.	6·4	623·5	24	1,130	1,154	1,122	5	27	185·0	0·8	0·4
Rájkote	1st Company, N. A.	1	133	...	158	158	157	...	1	118·8	...	...
	Squadron, 2nd Regiment L. C. ...	1	136	4	116	120	115	...	5	88·2	...	...
	7th Regiment N. I.	5	324	14	407	421	412	2	7	129·9	0·6	0·5
	28th do. N. I.	5	475	18	623	641	632	3	6	134·9	0·6	0·5
Bhuj	11th do. N. I.	5	668	9	368	377	354	5	18	56·4	0·7	1·3
Dwárka	Detachments, 7th and 28th N. I. ...	1	86·3	2	155	157	147	...	10	182·5	...	...
Bardá Chowki	Do. do. do. ...	...	79·2	...	355	355	346	2	7	448·2	2·5	0·5
Sádra	Do. 3rd and 9th N. I. ...	...	50	1	48	49	49	...	...	98·0	...	...
Mhow	16th Regiment N. I.	5	528	16	1,010	1,026	992	2	32	194·3	0·4	0·2
	25th do. N. L. I. ...	5	528	52	1,029	1,081	1,067	4	10	204·7	0·7	0·3
Mehidpur	10th do. N. L. I. ...	5	389	22	997	1,019	1,002	...	17	269·5	...	...
Augur	Wing, 10th N. L. I.	2·2	206	...	334	334	324	...	10	162·1	...	0·2
Neemuch	3rd Regiment L. C.	5	302	9	502	511	490	3	18	169·2	0·9	0·6
	24th do. N. I.	6	646	18	1,346	1,364	1,338	6	20	211·3	0·9	0·4
Nasirábad	Squadron, 3rd Regiment L. C. ...	1	127	4	162	166	157	...	9	130·7	...	...
	23rd Regiment N. L. I. ...	8	687	16	897	913	896	7	10	132·9	1·0	0·8
Indore	Native Details	2	194	...	190	190	182	2	6	97·9	1·0	1·0
	Total...	87·6	8,362	270	12,426	12,696	12,363	53	280	151·8	0·6	0·4

SIND DISTRICT.

Average strength present during the year	2,848
Average daily sick per cent. to the average strength	2·98
Ratio of mortality per cent. to the average strength	1·93

H. M.'s 27th or 1st Belooch Regiment N. L. I.

KURRACHEE.—In medical charge of Surgeon S. B. HALIDAY; Strength, 652.

Location and Movements of Corps.

The corps during the year was stationed in the FitzClarence Barracks, Kurrachee.

Topography and Physical Geography.

Kurrachee is a sea-port of Sind, near the north-western extremity of the coast of that country, latitude 24° 51′, longitude 67° 2′. It is situated near the base of the southern extremity of the Pubb or Brahooic Mountains, on a level space intervening between them and the sea. The town is three miles from the landing-place, but it has been rendered easy of access by the formation of a mole and road. The climate is cool, equable, and moist, never becoming very hot or cold; average temperature 70, highest 92 in June, lowest 38 in January. Rain-fall was inches 7·67, is generally only 2 to 3 inches, but sometimes 10. Sub-soil water is found at from 20 to 30 feet from the surface.

Soil.

The soil is sandy, but generally largely mixed with warp, and in some places thickly covered with it; this forms rich alluvial soil, which would be highly fertile but for the scarcity of water and the large amount of salt which is present in the soil, and in several places forms a thin white efflorescence on the surface like hoar-frost.

Water.

This is scarce and brackish, generally producing diarrhœa, which sometimes lasts for several weeks in persons who have freshly arrived in the station. The sepoys are supplied with water from the commissariat well, which is situated about 800 yards to the north-west of the barrack.

Drainage.

There is only surface drainage, which acts imperfectly from want of fall, as the surface is very level, and only a few feet above sea-level. The surface of the soil from the alluvial deposits becomes baked by the sun as hard as a sun-dried brick, and will not allow the water to percolate through it, and from the above reasons water collects on the surface in several places when there is rain.

Effects on Climate.

The climate from the above causes is rendered generally very moist and relaxing.

Lines—Available Space.

The available space is ample,—in fact some of the barrack-rooms (all of which are on plinths) are unoccupied. The patcheries are barrack-rooms divided longitudinally by one long wall 8 feet high, leaving a space of 8 feet between its top and the roof, and then divided transversely by other walls into rooms, which extend up to the roof. The average height of a barrack-room is 18 feet. The rooms are too small for a family, giving a superficial space of only about 12 feet by 9.

Ventilation.

This is fairly effective, being supplied by a door and windows in each room, and a covered ventilator in the roof over each pair of rooms.

Bazaar.

There is a small bazaar in the lines for the convenience of the sepoys under regimental control.

Neighbouring Villages.

None close.

Drainage.

Surface drainge only; but, as the lines are on a slight elevation, all water flows off.

Conservancy and Sanitary Arrangements.

The latrines are sufficient in number and accommodation; they are supplied with iron pans, which are dammered frequently. These and the barrack streets are kept clean by ten sweepers, who twice daily empty the contents of the pans into an iron cart which is kept for the purpose, and the cart is then removed to a distance, and the contents buried in a hole which is covered up with earth. The dry sweepings are removed similarly in a wooden cart.

Water-supply. The sepoys are supplied by bheesties with water from the commissariat well, which is situated about 800 yards to the north-west of the barrack.

Imperfections. None, except that the water is brackish.

Sources of Impurity. Rendered brackish by the salt dissolved from the soil.

Suggestions. Water will shortly be supplied to the town from the river Indus.

Food—Quality of, and whether abundant and cheap. The quality was fair, quantity sufficient, and price moderate.

Clothing. Good and sufficient.

Duties, and their Effect on Health. The usual parades and guards, which have no special injurious effect on health.

Exercise, Amusement and Occupation. Wrestling, parallel and horizontal bars; of the first the natives are particularly fond. There was a public exhibition of all the exercises every Thursday afternoon in which all comers were allowed to compete with the sepoys; a large number of competitors always entered the arena, the victors receiving turbans as prizes from Lieutenant-Colonel Hogg. From 1,000 to 1,500 spectators weekly assembled to witness the sports.

Lock-up Rooms and Cells. Of these there are four, which are large, lofty, and airy.

Marches. The regiment marched from Kurrachee to Hyderabad, having started on the 21st December, and arrived in Hyderabad on 31st December; the distance is 100 miles. The marches varied in distance from 9 to 18 miles; 4 miles per hour was about the speed. There was very little actual sickness, only a few men having suffered from fever and bronchitis. But a large number suffered from shoe-bite, as they do not wear stockings, and their boots are hard and ill-fitting. Some of these were severe, and had to be allowed shoe leave and to accompany the baggage or go with the sick. Several men who from age or unfitness had been sent before the last invaliding committee in November, but were rejected, fell out frequently, or had to be taken on the sick list, and fully demonstrated that on active service they would not only be useless but an incumbrance.

Hospital Is well situated in a large compound a few hundred yards to the north-east of the lines, and is a spacious, lofty, oblong building surrounded with a large closed-in veranda, which is at each end partitioned off into four small wards; there are two large wards with a dispensary between them. Free ventilation is provided by numerous doors, windows, and large covered ventilators in the roof.

Accommodation and Defects. The accommodation is ample, and there are no defects in the hospital.

Requirements. A dead house and store-room are required.

Conservancy. The dry-earth system is carried out—the fœces being received in one vessel and the urine in another. These are emptied by two sweepers into an iron dammered receptacle, which is emptied twice daily into an iron cart, and disposed of in the same manner as the ordure from the lines.

Hospital Water-supply. Same as lines.

Sickness, Mortality, and Invaliding. The chief diseases were the following, arranged in their order of frequency:—Malarious fever 115, contusion 107, lung affections 46, digestive system 77, including 11 cases of dysentery. No hepatitis occurred. The fever was almost all of the intermittent description, only 3 of remittent having occurred, and all the cases were generally easily cured by the hypodermic injection of quinine.

One death occurred from remittent fever; the patient was delirious when admitted. The contusions were slight, and chiefly shoe-bites, or produced by the gaiters, as the sepoys do not wear stockings to protect their feet. The lung affections consisted of bronchitis with a few cases of pneumo-bronchitis; some of these were severe and debilitated the patient very much. The digestive system gave dysentery 11 and diarrhœa 11; the former yielded to large doses of ipecacuanha, and the latter was treated by astringents. One death occurred from chronic diarrhœa which the patient contracted while on leave; he was much debilitated when admitted, and gradually sank from defective digestive powers.

Mortality. Only two deaths occurred, one from remittent fever and one from chronic diarrhœa.

Invaliding. Twenty-five sepoys were sent to the last invaliding committee in November, but only 7 were passed, 4 being pensioned, and 3 discharged with gratuity.

Principal Causes of Sickness. The chief causes of fever were cold, change of temperature, and malaria. Lung affections arose from cold, and frequently from the debility produced during fever; bowel diseases were produced by the brackish water, improper food, and sudden changes of temperature.

Mortality according to Race. Two Mahomedans died.

Influence of Rain-fall. The rain-fall was inches 7·67, and produced no special influence.

Vaccination. Twenty-nine persons were successfully vaccinated. No re-vaccinations were performed; of these 18 were males and 11 females. Mussulmans 25, Hindus 4.

General Health and Physique of the Men. Good.

Special Observations. Embryulcia was performed twice on wives of sepoys; both had contracted pelves. One recovered most satisfactorily, the other sank after 24 hours; she had been in labour for four days. No intimation was received of the case previous to admission into hospital.

No apprentices were attached to the hospital.

Resumé. The health of the regiment was satisfactory during the year under consideration. Only two deaths occurred against 8 in the previous year. The total number of admissions were 490, of which 438 were Mussulmans and 52 Hindus. The admissions in 1873 were 655; this shows a decrease of 165 sick in this year's report from last year. Seventy-five recruits joined during the year, of which 55 were Mussulmans and 20 Hindus. The regiment is composed of 570 Mussulmans, 140 Hindus, and 3 Jews.

2nd Belooch Regiment.

HYDERABAD.—In medical charge of Surgeon-Major MORTON; Strength, 636.

Location and Movement of Corps. The 2nd Belooch Regiment was quartered in Hyderabad until the 7th December 1874, on which date the head-quarters marched to Kotri *en route* to Kurrachee.

Detachments. A detachment numbering 1 European officer, 3 native officers, and 158 non-commissioned officers, rank and file, remained at Hyderabad until relieved by the 1st Belooch Regiment on the 31st December 1874.

Topography and Physical Geography. The cantonment of Hyderabad is situated on a low *plateaux* of nummulitic limestone, which rises abruptly from the alluvial plain extending for about two miles to the banks of the Indus.

Soil. There is no soil properly so called on that portion of the *plateaux* on which the cantonment is built. The surface is sandy and covered with small stones and pebbles, and for a depth of about 3 feet is composed of conglomerate.

Water. The climate of Hyderabad being very dry, the rain-fall annually not averaging more than 5 inches, there is no water-lodgement, save on occasions of heavy storms, when the rain collects in hollows on the *plateaux*, but it is absorbed or dissipated by evaporation in three or four days.

Effects on Climate. Situated as Hyderabad is on a low calcareous range between the river Indus to the west and the Fulaili, fed by the Indus, to the east, with little or no vegetation save that covering the alluvial plain stretching to the Indus and along the banks of the Fulaili, with a wilderness of sand and jungle scrub lying to the north and east, the climate must of necessity, both from geographical position and geological formation, be hot and dry, or cold and harsh, according to the season of the year. The extremes of temperture vary considerably. The mean temperature ranges between

62° in the cold weather and 92° in the hot, when the limestone rock becomes heated to a degree so intense that the temperature occasionally rises as high as 115°. During the cold season the atmosphere is extremely dry, and the variations of temperature are sometimes excessive, the thermometer occasionally falling to 32°.

Lines

The lines cover a space 257 yards in length by 152 in breadth, and have a south-westerly aspect. They consist of 36 mud pendalls in 12 rows, with the native officers' huts placed behind the lines; two roads 20 yards wide and one 11 yards, the latter separating the pendalls from the native officers' huts, run the entire length. These are intersected by 10 roads, one—nearly central—23 yards broad and the others 9 yards in width.

Available Space.

The accommodation provided is the ordinary description of pendalls for the men and huts for the native officers. A pendall consists of a verandah running on each side, and central space of the following dimensions:—length 76-6, breadth 20, height 10, giving a cubic space of 15,300. The verandah is of the same length, breadth 5, and height 6 feet. The number of unmarried men accommodated in each pendall was 28, giving 510 cubic feet to each occupant. To meet the requirements of married men and their families, each pendall has a central partition running the entire length, the space on either side being subdivided by cross partitions to form six rooms, or in all accommodation for 12 families. Neither the central nor the cross partitions, which are of wattle and daub, extend to the roof, an arrangement which admits of a general free current of air throughout. The pendalls are not built on plinths, but there is a raised space about 4 feet broad and 6 inches high surrounding each pendall.

From length of habitation and structural defects the lines cannot be considered healthy habitations in any hygienic sense. The pendalls are old, and show visible signs of crumbling away. They are constructed of mud, with a considerable quantity of chopped straw intermixed in the plastering. This admixture of mud and straw tells unfavourably on the general health at stated times. When heavy rain falls and thorough saturation takes place, vegetal decomposition sets in, and, during the slow process of drying, each pendall becomes a more or less virulent malaria-generating centre. The native officers' huts are ill-arranged, ill-constructed, and ill-ventilated, and are totally unfitted for their accommodation.

Ventilation.

Ventilation, both roof and lateral, is defective.

Bazaars.

The Sudder Bazaar is situated to the north-east of the lines and about 200 yards therefrom. It numbers about 1,342 inhabitants. The houses are better than the usual structure run up in bazaars, and the general sanitary condition may comparatively be pronounced favourably on, but strict supervision and better arrangements are necessary to fulfil health requirements.

Neighbouring Villages.

No villages border on the cantonments.

Drainage.

The drainage and mode of disposal of the refuse-water in the lines is essentially defective. Under existing arrangements the water is conveyed from the interior of each habitation through a chunamed channel into a porous earthen receptacle sunk outside. The water, which frequently contains vegetable and organic matter, is emptied twice daily over and around the lines, and is so dissipated by evaporation. So long as the south-westerly breezes prevail during the hot weather no appreciable ill effects arise from this mode of refuse-water disposal; but in the months of September and October, when the wind lulls and free currrents of air do not pass through the lines, the oft-saturated sand, more or less charged with vegetable and organic matter, gives off exhalations which remain suspended in the atmosphere, and exert an unfavourable influence on health, especially in the production of malarial fevers, usually so prevalent during those months. At the commencement of November, when the cold, northerly wind sets in and sweeps through the lines, a marked improvement in the general health takes place, and this I attribute in some measure to the wind clearing away the stagnant and impure air hovering over and around the lines.

Tanks.

There are no tanks in or near the lines.

Conservancy and Sanitary Arrangements.

The latrine system of conservancy is carried out on what is known as the "standard plan"; but this plan was found to be far from sanitarily perfect, owing to the stone receptacles and their corresponding iron pans being too short. The consequence was, that in the position of defœcation, and especially in the case of tall men, the urine was ejected forwards and fell on the hurter stone, flowing on to and saturating the earthen floor, or dropping between the hurter stone and the iron receptacle. A representation was made on the subject, and it

was decided to elongate the stone receptacles six inches, and to make the iron pans of a similar length and to fit more accurately, to prevent urine and fœces passing between the pans and receptacles.

The iron receptacles are themselves defective. They are narrow, elongated pans, not made sufficiently strong at the bottom to bear for any length of time the constant friction of pushing in and pulling out of the stone compartments. In consequence they soon become useless, and have to be replaced. The sides are equally weak, and become dented in all directions. Sanitarily speaking they are far from efficient in not having a partition to divide the urine from the fœces. It is essential that they should be separated, as when mixed together decomposition is much more rapid, ammonia and fœtid organic matters being disengaged in large quantities. Iron receptacles should, therefore, be constructed with a compartment one-third of the length in front for the urine, which might be covered over, spittoon-fashion, to prevent the contents being jerked out, as is so often the case now. The cross portion would strengthen the receptacles, which might be greatly improved by the addition of four small wheels to run in and out, an arrangement possessing the combined advantage of economy and of more perfect conservancy in preventing the wearing away of the bottom of the receptacles and in enabling the contents to be withdrawn without spilling.

Water-supply.

The water-supply is derived from wells, is sufficient in quantity, and of good quality so long as the inundation waters of the Indus overflow the wells; but at the commencement of the hot season, when the wells have fallen to a certain depth, the water becomes very impure. Contamination arises from two sources: 1st, the principal drain, which carries off the rain and storm-water, sweeps along the surface impurities of the cantonment, and discharges itself into the "Beyla," where the wells are situated; 2nd, the decaying vegetable matter left on the subsidence of the inundation gravitates to the bottom of the wells, and at a certain depth is disturbed each time water is drawn. A scheme for conveying water from the Indus to Hyderabad is being carried out, and when the works are completed the cantonment will be supplied with pure water throughout the year.

Food—Quality of, and whether abundant and cheap.

The staple food was good, and both abundant and cheap.

Clothing.

The men when off duty wear the customary dress of their respective castes. The regimental dress is alike serviceable and conducive to health.

Duties, and their Effect on Health.

The duties were of the ordinary parade and guard nature, and occasionally escort duty. No injurious effects to health result therefrom.

Exercise, Amusement, and Occupation.

Of the usual kind common amongst natives. One evening in the week is set apart for amusements, such as gymnastics, wrestling, &c. &c.

Lock-up Rooms and Cells.

In the quarter-guard are four cells of the following dimensions:—length 8 feet 9 inches; breadth 8 feet 6 inches. The superficial area is 68 square feet and the cubic capacity 612 feet.

Marches.

The regiment made two marches, and traversed a distance of 282 miles in the year. On the 15th January, 466 of all ranks left cantonments on a circular marching tour, proceeding to Hajipur, Mirpur Buttora, and Budina, returning by Tando Muhammad Khan. The time occupied on the march was 28 days and the distance travelled over, 172 miles. The effect on the health and physique of the men was excellent. There were but few stragglers, fewer still sick, and only a very small number suffered from "shoe-bite." Though the men are provided with boots made English-fashion, yet on this and on the subsequent march to Kurrachee they suffered very little discomfort from their boots, which may be attributed to the practice of refusing hospital admission to "shoe-bite" cases, all such cases being best treated by prevention at the hands of the native officers, who are made responsible that the boots of the men of their companies fit them properly. I have found this mode of dealing with "shoe-bites" a most effectual preventative to malingering, the wilful production of foot-sores being one of the easiest and most common modes adopted by sepoys to render themselves temporarily unfit for duty. In no instance has the regimental gaiter produced sores or abrasions of any kind.

On the 7th December the head-quarters of the regiment left Hyderabad for Kotri *en route* to Kurrachee to relieve the 1st Belooch Regiment. The road selected was *viâ* Tatta, and

the distance from Kotri to Kurrachee, 108 miles, was marched in 11 days, a halt being made every third day. The men enjoyed good health throughout the march, with the exception of a private, who was attacked with acute dysentery, and who afterwards succumbed to the disease.

Hospital and its Surroundings

The hospital is not well situated. Lying behind and in close proximity to the lines, it is in a measure shut out from the south-westerly breezes throughout the hot weather, and any emanations arising therefrom are carried through the wards by the prevailing wind.

Ventilation.

The ventilation, especially the lateral, is good.

Over-crowding.

There was no overcrowding. During the months of September and October, when malarial fevers prevailed, hospital tents were pitched to the north of the hospital, and in this manner overcrowding was avoided.

Accommodation and Defects.

I would recommend that the present hospital be abandoned, and that the building formerly occupied as a regimental hospital, now the General Hospital, which has much the advantage, both as regards position and surroundings, be re-occupied.

Conservancy.

The hospital latrine consists of a series of narrow, chunamed receptacles, without any intervening screens, and enclosed by mud walls. Latrines planned in this manner are alike an outrage on decency and a reflection on sanitation. The chunam wears off, and the dry earth becomes saturated with fœcal and urinous matter, and not only this but the lime used in making the chunam is acted upon by the urine, &c., and itself becomes offensive. The use of any but hydraulic lime in the construction of latrines or of stone receptacles is objectionable.

Hospital Water-supply.

The hospital is supplied with water from the same source whence the regimental supply is derived.

Sickness, Mortality, and Invaliding

The standard of health of the regiment was not so favourable as in the preceding year. The admissions were 799 against 665 in 1873. There were 3 deaths, one from bronchitis with hepatic complication and 2 from acute dysentery. The latter disease was in one case contracted on the march from Kotri to Kurrachee, and in the other the patient was attacked a few days after arrival. There was great irritation of the whole intestinal track with corresponding prostration, and a rapidly fatal issue. Twenty-four of all ranks were invalided, including 4 subedars, 1 jemadar, 1 havildar, 2 naiques, 1 fifer, and 15 privates.

Influence of Rain-fall.

The total rain-fall was 9 inches 98 cents. No appreciable influence was exercised thereby, save one heavy fall, which injured the lines somewhat, and occasioned an increase of admissions from intermittent fever.

Epidemics.

With the exception of malarial fever there was no marked prevalence of any disease.

Vaccination and Re-vaccination.

Fifty-one were primarily vaccinated and 31 re-vaccinated during the year. There was a total absence of small-pox.

General Health and Physique of Men.

The general health was very favourable, until the month of September, when fever became prevalent, and continued so throughout October and November. It was not until the close of the latter month, when the northerly wind set in, that the health of the regiment improved. The physique of the men is considerably above the average.

Treatment of Disease when special.

No special line of treatment was pursued.

Resumé of the whole.

In matters affecting the sanitary state of military corps, whether European or native, it is impossible to overlook surrounding influences which act prejudicially on the public health. It should ever be borne in mind that the same local insanitary conditions which deteriorate the general standard of health, affect alike the military as the civil population. When an epidemic of disease breaks out in the locality of the one, it generally extends to the other; attention, however, is so concentrated on the limited area occupied by regiments that disease-generating causes outside that area are unregarded or passed over as lying beyond the limits of military supervision and control. I cannot, therefore, pass over in silence a subject so vital as public hygiene, highly interesting in itself, which is causing great and increasing interest throughout the civilized world, and regarding which legislative interference in England and elsewhere gives the earnest of a new impulse.

It has taken some centuries to teach us that health lies to a very great extent in our own hands, and that by a wise and careful administration of sanitary laws most of the evils of pestilential disease may be warded off. The history of medical and of all malignant epidemics demonstrates the impotency of curative medicine to stay the ravages of disease. That history conveys to us in the light of sad reality the warning lesson that the fearful mortality caused by epidemics in the Middle Ages was due, not so much to inherent virulence in the disease, as to an utter disregard, arising from ignorance, of the laws of public health among the people. We see the same ignorance, the same disregard of sanitary laws around us, but what measures have we adopted, what safeguards have we opposed to the evil of endemic influence? We have at vast expense surrounded British troops with every comfort and every appliance to conserve bodily vigour and physical perfection which the scientific spirit of the age has devised, and medical experience suggested. Barracks of unsurpassed accommodation have been built, food of the best description and of the most approved variety is provided, clothing suited to the climate and to the season of the year is issued, the peril of solar exposure is carefully avoided, duties have been lightened, and in a measure amusements and recreation have taken their place, and better habits of life prevail. Yet with all this expenditure of money, labour, and skill, we are, apparently, as far off the solution of the problem of health preservation for the European soldier as in pre-sanitary days. The subject is no longer one of curious speculation. The measure of our success may be gauged by the extent of invaliding and the time spent in Indian sanitaria. It is true the death-rate has considerably diminished; but in the same or nearly similar ratio as mortality has decreased in like ratio has invaliding increased, so that the total loss to the service is little less than when facilities for home change were wanting and our soldiers were left to die in the country. The question—why do our troops, placed under physical and mental conditions the most conducive to health, suffer to almost as great an extent as formerly from the inroads of disease?—is one of great and increasing importance, and one we can least of all afford to disregard. Our present enlightened knowledge of the conditions of health furnishes the answer. In this matter as in a great many others of vital concern we have treated the form rather than the essence, the letter rather than the spirit. We have established sanitary oases in the midst of insanitary deserts, and have rested satisfied with the hygienic purity within, unmindful of the noxious miasmata ever flowing in from without. We have not taken into account those pathogenic causes which lie outside as factors of disease—causes which are intensified by the character of the season, the degree of moisture the temperature and ærial movements of the atmosphere, and which induce that depressed state of the vital powers, that lowered nervous energy, that condition of system which precedes the establishment of so many cases of chronic organic disease. It is this condition of lowered general nutrition of every part of the body which so often in this country culminates in the extreme malnutrition of that part or organ which natural constitution or accidental circumstances render less liable to resist organic changes. We pay too little attention and attribute too little importance to the first of those processes of blood deterioration and defective nutrition the sum and sequence of which constitute disease. We have hitherto been existing under a sense of false security, but happily the remedy lies in the extension of those sanitary laws which apply equally to all races and complexions, not less to the Asiatic than to the European.

Probably no subject commands so near an approach to unanimity at the present time than public hygiene, the weight and importance of which has met with an emphatic recognition in the incorporation of a public health service as a new element of administration into State and municipal government. Rural districts and towns are alike objects of solicitude with large cities. Every civilized country is displaying anxiety to make reparation for the errors of the past. Italy, notwithstanding her crippled resources and embarrassed financial condition, is about to undertake a great sanitary duty to improve the health of Rome in embanking the Tiber and cultivating the waste lands of the Agro Romano, a work not less to be appreciated in the Cives Romani of the present day than those stupendous aqueducts and noble edifices, silent proofs of ancient genius and skill, which have been the wonder and admiration of modern times.

The scientific knowledge of preventive and of other branches of State medicine has of late been largely extended, so much so that it is now recognised as an imperial duty, not only to employ means to cure disease but to avert it, to take charge of the healthy as well as of the sick, to preserve health quite as much is to administer agents to restore it, and to determine the conditions which exercise an unfavourable influence on health and the special consequences which result thereform. If we consider how vastly more numerous are the illnesses which we are able to prevent than those we are able to cure, what a wide and almost uncultivated field is here presented for our energies in tracking disease, not only to its secret lurking haunts, but to its very birth-place; to stamp it out ere it has the opportunity to germinate and spread. If we also consider that there is no country where disease is so sudden in its invasion, and so

rapidly fatal in its effects as in India; that all miasmatic causes are intensified by the nature of the climate; that decomposition proceeds at a more rapid rate and noxious gases are generated in greater volume; while free access to the surrounding altmosphere is given by means of the cracked and fissured earth baked by a burning sun; no country has stronger motives impelling her to a general and comprehensive sanitary policy.

The subject has a peculiar interest for us when we further consider that the enlightened sanitation of the day has sprung from that modern scourge, cholera, which has its cradle and home amongst us. Its history and that of all epidemic pestilences repeats and will repeat one certain but sad general conclusion, which we should ever bear in mind, that a certain number of people, greater or less, must fall victims; for them there is no hope, for when the epidemic wave bursts with full force, death is fearfully rapid and awfully certain. Appallingly sudden in its invasion and wide-spread in its destruction, no disease has ever taught this sad lesson more painfully than cholera, and none has excited interest so universal and etiological enquiry so extended. We have profoundly investigated into its origin and causes; we have traced its history, followed its progress, and noted its phases and peculiarities; we have brought to our assistance physiological, optical, chemical, and pathological science, and have laid the medical world under contribution to test the value of observation, to collect additional facts, and to resolve doubts; we have put to the test every variety of medicinal agent to assist those organc processes, the attendant signs and symptoms which are but the expression of a natura: effort to eliminate the poison and to effect a cure. And what have been the practical fruits of this labour, of these researches? We must confess that, so far as relates to a therapeutic mastery over the disease, we have been pursuing an *ignis fatuus;* we know not of one single curative agent on which to rely. Impotent to heal, we must turn to prevention as our only safeguarde

We have learned to appreciate how much and how successfully mortality may be diminished by well-directed rural and urban hygienic measures, such as drainage, cultivation, and improvement of the soil, improvement in the condition of living and the circumstances of the people, especially in regard to better dwellings, house cleanliness, and ventilation. The sickness arising annually in the British Isles from preventible causes has been estimated at four million two hundred thousand cases, and the yearly mortality from the same causes at one hundred and twenty-five thousand. Who will take upon himself to estimate, even approximately, the annual sickness and mortality in this country from preventible causes? We see these causes at work around us; examples stand up vividly before us. Can nothing be done for those whose hard fate it is to struggle for existence with that earth-born, fever-generating poison, malaria, the deadly enemy of the human race in India, producing those morbid changes structural deraugements, and functional alterations in almost every organ of the body with which we are unfortunately so familiar? Can nothing be done to purge our cities, towns, and villages of that state of fifth, and that foulness of medium which spreads and intensifies the poison of cholera and typhoid fever? Must disease here be considered an indispensable part, of every considerable aggregation of human beings? The answer is contained in the experience of other countries and the inestimable benefits they have derived, and will derive from well-organized sanitary administration, central, local, and compulsory. It is true we have to deal with the accumulated abuses of generations, that we have to treat a chronic condition of ill-health, that we have to place a check on habits of life which encourage continual outbreak of epidemic disease, and having broken out, which foster and encourage their spread and virulence. This is the normal condition of things going on year by year, and under ordinary circumstances it excites little notice or remark. The mind becomes reconciled to what it sees every day, and soon begins to regard as inevitable that which is common. What art and science have done for other countries they can do for India. Sanitary progress, in any worthy sense of the term, remains unappreciated, its meaning is still an enigma, its results uncomprehended and uncared for by the peoples The hindrances are great and the obstacles many in the path of sanitary reform, in dispelling ignorance, in overcoming prejudice, and in diffusing hygienic knowledge; but it only requires legislative interference, aid, and encouragement on the part of Government, and all difficultie will in time vanish away.

Civilized life is but the varied expression of man's power to modify the course of nature for his own good, to neglect no means, to despise no service, to promote his own social, moral and physical well-being. It is the function of our superior civilization to endeavour to arouse in the native mind motives to advance in all the arts which make the civilized condition of the people to differ from the rude life of the savage, to raise them to a higher moral and physical standard. "After their kind" is the law of generation impressed upon man, a natural law impressed upon animal and vegetable life from the world's first genesis until now. The physically weak and the morally tainted, hand down to their children their depraved natures; and these again, starting from a lower level, produce others still weaker and more deeply tainted. They themselves a shade lower in physical and moral strength than those who begot them, in their turn bring into the world a race somewhat more feeble.

H. M.'s 30th Regiment N. I.

JACOBABAD.—In medical charge of Surgeon HOWELL; Strength, 592.

Location and Movement of Corps.

The regiment ever since its organization in July 1858 has been permanently located at Jacobabad.

Detachments.

The following detachments were on out-post duty during the year:—Thul, 14; Káshmor, 14; Sui, 21; Goránári, 21; Toj, 13; Sanri, 13; making in all a total of 96 men.

Topography.

This has been so fully described by my predecessors that a very few remarks on my part will suffice. Jacobabad or Khangar is the chief town of the Upper Sind Frontier District, situate in longitude 68°30′ E. and latitude 28°16′, 180 feet above the sea-level. The soil of the country is chiefly an alluvial deposit from the Indus; being a flat level plain it does not admit of any drainage. The flood water which swamps the country annually is got rid of by absorption and evaporation.

Effects on Climate.

The low situation of the country, great extremes of temperature, continuous heat for more than six months, periodical inundations, and the facilities afforded for the production of malaria, simply make the climate of Jacobabad a deadly one. When a stranger first arrives at Jacobabad, if it be in the hot months, he is not at all favourably impressed with the country, and after a short time gets almost tired of existence. Both mind and body are considerably below par, and the cold weather is hailed with delight; this unfortunately is accompanied with malaria, which renders the cold season a very unhealthy one.

Lines.

Well situated towards the east end of camp, close to the parade-ground, divided into two sets—one apart for the bachelors and the other for the married men. The bachelors' quarters are uniform, built in rows widely apart, and are in good condition, and divided into rooms by a tatty partition, the cubic contents of each room being 768 cubic feet. The family lines are in the rear of the bachelors' quarters, and built according to the taste of the occupants, each house having a mud wall built round it. Both sets of lines are fairly ventilated, and have no neighbouring villages or tanks near them.

Regimental Bazaar.

Close to the lines, and very well supplied with meat, vegetables, grain, and fish when procurable; it is kept very clean and neat, under the immediate supervision of a chowdree and two assistants.

Conservancy.

The dry-earth system is followed with good effect. The bachelors have latrines built far out on the plain, but the married have privies close to their quarters. There is a proper staff of regimental sweepers, and cleanliness is strictly observed.

Water-supply.

Abundant in quantity and very fair in quality. In the hot weather the sepoys chiefly use water from a large nallah called the Makimwah; during the cold season they have recourse to well water.

Food.

There is no dearth of food, and what is brought for sale is very good in quality and comparatively cheap. In the cold season the meat is excellent, and vegetables, both English and country, plentiful; in the hot weather we have scarcely any vegetables, but fruit in the shape of mangoes, grapes, and delicious watermelons.

Clothing.

During the hot season light clothing of American drill, coloured drab, called "kakee"; in the cold weather a thick woollen Norfolk jacket, and trousers shaped something like knickerbockers, with gaiters attached, of a drab colour, and suitable over-coats. The dress I think is very comfortable, and being the same colour as the earth would make a very useful service dress, as the regiment when formed on parade is almost invisible when seen from a fair distance.

Duties.

During the hot season three parades a week and roll-call every evening, excepting brigade holidays and Sundays. In the cold weather besides the above they have ball practice, and men under 15 years' service running drills. The duties are not very severe, and do not exercise an unfavourable influence on health.

Amusement and Exercise.

There is a gymnasium close to the lines; all recruits are bound to attend it, but many of the younger sepoys do so of their own free will. This is really a very useful institution, and tends greatly to improve the general appearance of the men. I know of no other amusement, except, perhaps, a little fishing when the nallahs are full. Many, however, spend their evenings in a stroll to the town.

Cells. There are no cells; the refractory are locked up in the guard-room.

Marches. None during the year.

Hospital and its Surroundings. The hospital is conveniently situated between the married and unmarried quarters; it is not sufficiently commodious, there being only room for 20 beds. This is more than sufficient during the hot season; but in the cold weather, when the daily average of sick amounts to 50 or 60, this scanty accommodation is very inconvenient. Rowties have to be pitched for the sick. The building of a new hospital on a much larger scale is, I believe, sanctioned, and it is to be hoped that they will commence erecting it soon. The situation and ventilation of the hospital are all that can be desired, and there is ample accommodation for the assistants.

Conservancy in Hospital. The dry-earth system is here also followed; the latrines are, I am sorry to say, in a very dilapidated condition. I have reported the matter officially, and hope in a short time that new ones will be erected.

Water-supply. From a well near the hospital.

Instruction of Pupils. None to instruct. I have held occasional examination of the hospital assistants.

Sickness and Mortality. There were 627 admissions during the year and 15 deaths in hospital. Comparing this with last year's return it shows a very slight decrease in the number of admissions. The following table points the difference:—

	1873.	1874.
Average strength	595	592
Admissions	624	627
Deaths	11	15
Percentage of treated to strength	113·2	109·1
„ of deaths to strength	1·85	2·5
„ of deaths to treated	1·6	2·5
Proportion of admissions to strength per cent.	104·87	105·9
Average number of daily sick	16	20

Malarious fever, as it always does, causes the largest number of admissions; there were 249 cases admitted under this heading. This shows a slight decrease compared with the year preceding, when 316 cases were admitted. Nearly all assumed the tertian type, some rather bad quotidians, very few genuine remittents. In many the disease this year was attended with very severe diarrhœa, which lasted for several days causing great debility. Malaria is present, more or less, all the year round, but arrives at its intensity from the months of September to December. This corresponds to the time when the water surrounding the country charged with decomposing organic matter (chiefly vegetable) is drying up.

From the heavy rain-fall and excessive inundation this year, together with the very unsanitary condition of the station, I am surprised fever has not been more prevalent. The same routine plan of treatment was adopted: quinine in 5-grain doses two or three times a day, and occasionally small doses of the liquor arsenicalis. Nearly all the fever cases occasion large spleens, and it is rather peculiar to Upper Sind that the liver is not so often affected as in other parts of India

Chest Affections. These cause a very large mortality: 40 cases were treated—20 from pneumonia, 17 bronchitis, 2 phthisis, and 1 pleuritis. Five of the pneumonia cases proved fatal. Chest affections are very prevalent in the cold weather, commencing in September, when the nights begin to cool and there is a heavy fall

of dew. It is impossible to diminish the number of admissions from this cause. Natives are so very careless as regards clothing, they walk about on a very cold day with the same amount of kit as they would in the hot months of June or July.

Cases of ordinary fever often terminate in pneumonia. The great mortality I think could be obviated. Pneumonia is a disease which terminates favourably, or otherwise, according to the constitution of the patient, and requires careful nursing and nourishing more than medicine. Change of station would remedy the first, and altering the mode of dieting for the sick in the Native Army would accomplish the second.

Bowel Affections.

Under this heading 48 cases were admitted—25 from diarrhœa, 8 dysentery, 14 colic and constipation, and 1 enteritis. Diarrhœa and dysentery occurred chiefly during the time of the flood. There were two deaths, both in chronic cases. The case of enteritis also terminated fatally: the deceased, a hard drinker, was admitted with symptoms of colic on the 24th of March, and died two days after admission. On a *post-mortem* examination a great portion of the structure of the small intestines was found inflamed. In the treatment of dysentery, ipecacuanha in large doses of 3 grains or more was found useful; in some cases smaller doses of ipecacuanha with quinine proved efficacious.

Ulcer and Boils.

There were 80 cases admitted. Boils are very prevalent in the hot weather; they appear, as a rule, in crops. The bigger eventually terminate in ulcers, which prove very troublesome, and are only cured when the cold weather sets in, or from change of climate.

Contusions.

From shoe-bites; these very often turn into intractable sores.

Under the heading "venereal" there were 17 admissions—6 from gonorrhœa, and the others from syphilis, both primary and secondary. The number of cases treated in hospital (as I have often mentioned in my former reports) do not point out the extent of this evil. Sepoys either from a feeling of mock modesty, or preferring to be treated by the hakims of the town, do not come to hospital until they get so bad that they cannot help themselves. The only way to prevent this would be submitting the men to a periodic examination. In the treatment of primary syphilis I freely use iodide of potassium, with very small doses of the bichloride of mercury; the broken-down constitutions of the men will not permit of the use of mercury in any other form.

Mortality.

There were 15 deaths in hospital and 5 out of hospital; 2 of the latter were in men sent away on sick leave, and the other 3 occurred amongst those that went on furlough. The mortality is greater than what it was last year, deaths to treated per cent. in 1873 being 1·6 compared with 2·5 for 1874; of this large mortality there were 5 deaths from pneumonia, 1 from diarrhœa, 1 dysentery, 1 remittent fever, 1 enteritis, 1 paraplegia, 2 debility, 1 suppression of urine, 1 inflammation of ear extending to the meninges of the brain, and 1 from scurvy. The deaths from pneumonia were in debilitated-looking men, the disease running a very rapid course, and implicating generally both lungs. No remarks are necessary on the remaining, except, perhaps, the cases of paraplegia and urœmia.

The former occurred in a young, healthy-looking sepoy, aged 30. He was admitted into hospital with symptoms of lumbago on the 29th of June 1874, and died on the 8th of July. At first I never for a moment suspected it was the commencement of a case of paraplegia; in a couple of days complete loss of motion and sensation of the lower extremities set in, and on consultation with another Medical Officer we diagnosed the case to be due to pressure of some kind on the spinal cord. The man confessed to having wrestled a few days before, and this was followed by pain in the lumbar region ending in paralysis. No *post mortem* was made, as the friends strongly objected to the opening of the body: so the exact cause of the paraplegia remains a slight mystery, although I am pretty convinced it was due to pressure from a clot of blood on the spinal cord. Iodide of potassium in large doses was freely administered, and after a couple of days the deceased was brought under the influence of mercury; but everything failed, and the poor fellow died from exhaustion.

The death from urœmia is, in my opinion, due to malarial poisoning in an intensified form. The deceased was a recruit, aged 20, admitted with symptoms of anœmia on the 23rd of October 1874; he was subject before his last admission to repeated attacks of intermittent fever, and was quite exsanguine on admittance. Quinine and iron, with small quantities of arrack, were ordered; a couple of days after admission suppression of urine set in, which ended in coma, death occurring on the 27th, four days after admission. This suppression being so unexpected, I made a *post mortem*. The bladder was found quite empty, heart right side full of decolourised blood, left side empty, kidneys and all the other organs very anœmic-looking, but quite healthy in structure; unfortunately urine of the deceased was not examined on admission,

as no kidney disease was suspected. In my opinion death was due to the paralysing influence of malaria.

Invaliding. Fifty men were brought up before the last General Invaliding Committee; 49 of the number passed the board, the remaining 1 was recommended six months' sick leave to his native country. This is a much larger number than last year, when only 31 were pronounced unfit. Most of the cases invalided were from general debility and premature old age, the effects of climate. A few of the men were under 15 years' service, and, consequently, received a gratiuity; the majority had just completed 15 years entitling them to pension; they were all most anxious to get their pensions and to leave this station. A great many more men came up before the regimental committee, wanting pension or discharge, and this I am sure is due to the dread they have of serving at Jacobabad; many of those invalided would, I am certain, have died if they had continued to serve another year in this place.

Causes of Sickness and Mortality. Extremes of temperature and excessive amount of malaria are the two principal causes of the large amount of sickness in this station. Long and continuous residence is also a very great predisposing cause. Heavy mortality principally occurs in the cold season, and is due chiefly to chest affections and fever; the former would not be so fatal if the constitution had not already been undermined by the depressing effects of the hot weather and repeated attacks of fever with its sequelæ, enlarged spleen and impoverished condition of the blood.

Years.	Hindus.			Mussulmans.		
	Strength.	Ratio per Cent. of Admissions to Strength.	Ratio per Cent. of Deaths to Strength.	Strength.	Ratio per Cent. of Admissions to Strength.	Ratio per Cent. of Deaths to Strength.
1871	341	140·5	3·5	358	157·3	3·3
1872	326	143·6	4·3	366	126·2	1·4
1873	232	129·3	2·6	356	93·5	1·2
1874	265	123·8	2·7	360	83·3	2·2

The above table will point out that there is a larger mortality among Hindus than Mahomedans; this is mainly due to the different habits of the two sects. A Mahomedan lives much better than a Hindu. The latter, especially among the high-caste ones, are vegetarians, and live very economically to the sacrifice of health; while the former, as a body, when they can afford it, always have meat once a day.

Rain-fall. 8 inches 40 cents during the year, being double the quantity of what fell last year; this heavy rain, occurring at the same time as the floods, pretty nearly destroyed the station.

Epidemics. None. The last was in 1867, when the station was visited with cholera.

Vaccination. Regularly practised, 25 cases being primarily vaccinated and 10 re-vaccinations. Two of the former and 7 of the latter were unsuccessful.

Health and Physique. Both considerably below par. This state of matters must continue as long as the regiment is not relieved.

Recruits. Fifty-two recruits were admitted during the year. The new orders on recruiting from the Presidency to which the regiment belongs, will not suit the corps stationed at Jacobabad. Recruits from Central India and the Punjab being excluded, we have had to admit young men from Sind and the Southern Mahratta Country. The former, especially those from Upper Sind, are very stalwart-looking men, but do not, I am told, make good soldiers. Those from the Deccan have proved a great failure; they suffer severely from the climate, and are constantly in hospital.

Report on Sind Ulcer.

The Sind sore, when fully formed, is a jagged-looking ulcer covered with a tenacious slough, occupying any portion of the human body, and varying in size from a 2-anna piece to the palm of the hand.

Modes of formation.

It makes its appearance in two ways. The majority of cases commences in a small red induration, at first perfectly painless; this remains stationary for some time, unattended with any constitutional disturbance; in about six weeks the centre becomes soft, and gives exit to a little discharge, which gradually increases. The skin eventually gives way, and then the sore commences to ulcerate, involving in many cases a large amount of tissue, pain, and some amount of constitutional disturbance sets in. This continues for about a couple of months, when the sore puts on a healthy action and cicatrises. The colour of the cicatrix is dusky-red, very similar to the copper colour of a syphilitic scar; the cicatrix in time fades. Contusions in the form of shoe-bites very often terminate in Sind sores.

Causes.

The great and continuous heat of Upper Sind is, I think, one of the causes. As a rule Sind sore attacks people during the height of the hot season. Malaria and defective sanitation may also exercise some influence in its production.

Treatment.

I know of no specific for Sind sore; the disease runs a certain course, and the most rational plan of treatment is leaving it to nature. In some cases, especially in delicate, strumous, or syphilitic individuals, improvement of the general health is necessary. All the astringents and caustics in the pharmacopœia have been tried, and there are some who labour under the delusion that they have found a cure for the troublsome affection. The disease, as I have already mentioned, attacks one generally at the height of the hot season, and disappears of itself in the cold. In obstinate cases change of climate is the only remedy. Strapping the sore at its commencement, and by this means excluding the air, proves sometimes useful.

1st Regiment Sind Horse.

Jacobabad.—In medical charge of Surgeon Banks; Strength, 343.

Location and Movements of Corps.

1. The regiment has not been moved during the year.

Detachments.

2. On an average 95 sabres were on out-post duty during the year.

Topography and Physical Geography.

3. Jacobabad is situated in a tract of country lying north of Shikárpur in Upper Sind, bounded on the east by the river Indus, on the north-west by the territories of His Highness the Khan of Khelat, and on the south by the Shikárpur Collectorate. Its altitude above mean sea-level is from 170 to 270 feet; Jacobabad itself being 180 feet, and lies between latitude 27° 56′, latitude 28° 27′, and longitude 68°, 69°44′. The general appearance of the surrounding country is that of a flat level plain, the greater part of which is covered by jungle and subject to inundation.

Soil

Is rich alluvial from the Indus washed over the country during the inundations. The neighbouring ranges of hills are composed of sandstone and limestone; shells, &c., in a fossil state abound in many places near the hills washed down with the detritus.

Water.

Jacobabad is watered from the Indus by the Begári Canal and its branches Sonewah, Mirzáwah, and Nurwáh Canals—the other sources being wells.

Drainage.

Jacobabad lies 40 feet below the level of the Indus at Káshmor, 80 miles from here, and 7 feet below the level of a large canal, which runs within three miles of cantonments: so natural drainage, properly speaking, is an impossibility. In former years, before the inundations swept over this part of the country, water was often sought for in vain at depths varying from 40 to 50 feet or more; now water can be struck at 4 feet, and in many places much less.

4. Doubtless want of drainage and defective sanitation in other respects have an effect on the climate. Stagnant water, which lies for months round the cantonments, is productive of malaria to such an extent that the entire population may be said to be affected by it. The fever season year by year is apparently becoming less defined, and lasting longer.

Effects on Climate.

5. New lines are in course of construction, well situated in every respect with abundant space, well ventilated, and in every way suitable to the place. The nearest bazaar to the lines is about a quarter of a mile. No villages close by. Line drainage none; two or three inches of rain will flood the lines. In the months of July and August about 8 inches of rain fell, which flooded the lines for a month. Artificial drainage is carried out to remove the surface water by running it into deep nallahs, but this plan is of doubtful efficacy, as it lies then in a larger mass and remains stagnant. Fortunately the intense power of the sun's rays at that time of the year dries up everything quickly. Sources of impurity: vegetable matter falling into the wells, surface water draining into them, and impregnation of the soil with the salts of potash and soda, are the chief sources of impurity. An analysis of the water used by the regiment in cantonment and out-post has been recommended and will shortly be carried out. A good-sized tank is situated in a garden about 300 yards from the lines; the water is not used by the troops.

Lines.

6. There are in each troop six surface latrines, which are cleaned twice a day by two sweepers, the number maintained in each troop. The excreta are removed once a day in carts to filth-pits outside camp limits, north north-west of camp. The conservancy arrangements are carried out under the immediate supervision of the native officer commanding the troops and the quarter-master.

Conservancy and Sanitary arrangements.

7. Water is obtained from wells, and during the hot-weather months, whilst the Indus water flows through cantonments, that source is freely used. In the cold weather the supply is confined to wells and four large tanks; the supply is sufficient for drinking, cooking, &c., but the dhobies are obliged to go some distance—ten miles—from camp to wash the clothes.

Water-supply.

8. Food consists of mutton, beef, goat, fowl, milk, eggs, wheat, curd, ghee, dhall. rice, vegetables, and spices, good in quality as a rule, abundant and cheap, the exception being when Jacobabad is an island, The Banias then raise the price of everything—free trade being allowed.

Food—Quality of, and whether abundant and cheap.

9. Varies according to season. In the hot weather the men are dressed in white altogether, with red turban and kumburbund. In the cold weather green English cloth. For night duties and morning parades they also wear neemchees (fur-coat).

Clothing.

10. The ordinary cantonment duties of the regiment cannot be said to be excessive or to have a bad effect on health. The men have five nights in bed. Cantonment duty forms an unimportant part of the duty; 95·4 troopers on an average have been on out-post and patrol duty during the year. This duty is very arduous owing to the dreadful vicissitudes of climate which it is impossible to over-rate. In many places on the frontier, where they are stationed and patrolling, the water is very bad—often so stinking that animals refuse it. In cantonments, during the recent floods which so nearly submerged the place, the regiment worked day and night making bunds. Duties which, of a necessity, expose them to such extremes, must be deleterious to health to a very great extent.

Duties, and their Effect on Health.

11. The men are engaged in their various duties—parades on foot and horse-back, guard duties, &c.—and do not appear to have much desire to enter into the varous amusements common to natives. The Commanding Officer introduced equestrian sports lately, tent-pegging, tilting at the ring, and feats of swordmanship; but whether the men themselves care for such sports is very doubtful.

Exercise, Amusement, and Occupation.

12. Standard guard can be used as a lock-up in the cold weather, but in the hot it would not be safe, as the ventilation is imperfect. No cells.

Lock-up Rooms and Cells.

13. Head-quarters have not left cantonments during the year.

Marches.

14. The hospital is well situated, being on the right flank of the lines; in its immediate vicinity are hospital assistants' quarters and dooley-bearers' lines, latrines, &c., and some trees, which give a grateful shade in the hot weather.

Hospital and its Surroundings.

15. The ventilation of the hospital is thorough. The main ward, 53 feet long by 24 broad, has six large doors, four large windows, and eight upper windows, fair sized, all opposite each other, giving a thorough cross ventilation, besides ventilation in the roof: so, as long as the doors can be kept open, ventilation is perfect. In the hot weather, during the day, and when hot winds are blowing, doors, windows, &c., have all to be closed: so at that time ventilation becomes deficient, but this occurs in every building here, public and private. During the hot weather the patients sleep out in the open—that is to say, from March to October, seven months; this is the case with the entire regiment. At that time of the year it becomes impossible to sleep in-doors without a punkha, the air being so stagnant. The punkha is also required to keep off the sand-flies and mosquitoes which abound.

Ventilation.

16. During the fever season over-crowding is frequent; the men have often to be kept in the verandahs, which are bitterly cold.

Over-crowding.

17. The accommodation consists of one large ward before mentioned and four small ones, used, respectively, for an office, dispensary, store-room, contagious diseases, and *post-mortem* room. No improvements have taken place, but an additional ward has been recommended; the matter, I believe, is now in the hands of the Executive Engineer. The accommodation for 25 men allowed for native cavalry regiments is perfectly inadequate for this climate though, doubtless, found to be sufficient in more healthy places.

Accommodation and Defects.

18. The conservancy of the hospital is carried out on the dry-earth principle, supplemented with McDougall's powder and carbolic acid, two vessels being in use for each man: so fluids and solids are separated. The plan works well here, but it is true that the numbers are not great; so that how the system would work were it more extensively used, I am unable to say.

Conservancy.

19. Is drawn from two wells close by. It is both abundant and apparently good in quality.

Hospital Water-supply.

20. Average present strength of the regiment during the year was 343·5. Admissions for the year 671.

Sickness, Mortality, and Invaliding.

Malarious fever as usual gave the greatest number of admissions—436, of which 3 were remittent fever. In the previous year 314 were admitted, showing an increase of 122. The type of fever common here does not call for any special remarks, being the ordinary intermittent, which recurs daily, and is, as a rule, readily amenable to antiperiodics. Obstinate cases are met with pretty frequently which resist all treatment for months, and I have met cases poisoned with malaria to such an intense degree as to cause death in a few hours. Remittent fever is not very common, only three cases being admitted during the year; but, as a rule, it is very fatal. The fever season proper commences in October, when the country is drying up after the inundations and the climate is becoming colder. This circumstance most likely is the great cause of fever, chills acting on constitutions debilitated by long weary months of intense heat; then comes the chill, which very frequently finds the men unprepared. They sleep out in the open under a heavy dew in September and October, it being too hot to keep in their barracks, so that malaria and climate soon fill the hospital. It is now impossible to define when the fever season commences or ends with certainty. Fever is now common all the year round; some of the worst cases have been met with here in the hot weather.. Dysentery has of late years become a common disease here; formerly it was very rare. During the year, 19 were admitted; the cause most likely of its increase here is owing to the inundations, and probably in some cases to impure water. However it is a very mild type, and always, or nearly so, yields readily to treatment. Hepatic diseases are nearly unknown. Fifteen cases of pneumonia were treated during the year. The type of the disease in all the cases was a low asthenic form, and were not admitted as a rule until the disease was in an advanced stage, the usual way it comes on. A man admitted with fever in the first place, after some days complains of cough and pain in his chest; then follow the various stages of pneumonia in such quick succession that they can be hardly remarked. The only treatment I have found useful in this disease is stimulants; expectorants, calomel, ammonia, and bark in many instances appear to give relief; but stimulants are most likely the sheet-anchor. Local application, &c., may often be useful.

Cutaneous system gave 59 admissions. Sind boils and ulcers appear to be much less common than in former years ; this has been remarked particularly in the case of ulcers. Whether the immunity is owing to increased cultivation or more rain falling, is uncertain. Local injuries give 71 admissions—falls, horse-bites, kicks, &c., and as a rule were trivial.

Mortality. Seven deaths occurred in hospital, 2 out of hospital, and 2 on leave.

Casualties.

In Hospital ...	Pneumonia	5
	Remittent fever	1
	Debility	1
Out of Hospital ...	Shock	1
	Gun-shot wound (suicidal) ...	1
On Leave.—From malarial poison		2

So out of a strength of 493 the mortality has been 22·30 per *mille.*

In the case of shock the man was thrown from his horse on parade, and was picked up deed. A most minute *post mortem* was made in this case to find out the exact cause of death but without any result. All the internal organs were perfectly uninjured ; he was supposed to have fallen on his head, and after most searching examination no injury could be detected. The following remarks were made in the monthly return at that time:—A minute *post mortem* was made in this case, commencing at the brain and its membranes. Spinal cord seen from within observed to be healthy ; no sign of congestion. Cervical vertebræ examined minutely, anteriorly and posteriorly ; no dislocation or fracture discovered. Heart was found to be healthy, with a large clot of blood in it. Liver, spleen, stomach, kidney, lungs, &c., extremely healthy. Deed appears to have been caused by shock ; he was a young recruit and in good health at the time of the accident. 2nd Case.—On the same evening a sowar shot himself with his carbine; the bullet entered a little to the right of the sternum between the 5th and 6th ribs, traversed the body, and made its exit 2 inches to the left of the spine between the same ribs.

Invaliding. Twenty men were invalided during the year—11 above 15 years' service, 9 under 15 Twenty men were granted sick certificates during the year for periods varying from six to one month ; 7 men out of this number were permanently disposed of at the General Invaliding Committee.

Recruiting. Thirty-seven men were entertained during the year ; they are under-sized and wanting in physique, but they were the best that presented themselves. Were recruiting allowed in Hindustan, a better stamp of man could most likely be obtained. Good men, as far as I am aware, do not present themselves for enlistment here at present. Whether the system of recruiting is a faulty one, or service on this frontier less popular, I am unable to say.

Principal Causes of Sickness. 21. Malaria and great extremes of heat and cold. Jacobabad for a great part of the year is absolutely an island, ingress or egress to it being impossible save by boat, and this is a state of things which lasts for months. The surrounding country is rapidly becoming a permanent swamp, of which Jacobabad will form the centre, or the spot where Jacobabad now stands a focus of malaria. Arduous duties no doubt in many cases predispose to sickness. In the awful heat of summer men are frequently patrolling the frontier heretofore without tents; the same duties in the winter, when it is bitterly cold. During the past hot weather over 120 men were on detachment duty, patrol, &c., and owing to the floods great hardships were experienced.

Principal Causes of Mortality. 22. The very fatal type of pneumonia and remittent fever which occurs here are the principal causes of mortality.

Mortality according to Race.

23. The regiment being chiefly composed of Mussulmans, no useful statistics can be given. Out of a strength of 493 only 28 are Hindus, and out of 11 deaths, which occurred in and out of hospital during the year, 2 were Hindus.

Influence of Rainfall.

24. The rain-fall, as a rule, is very slight, on an average for the past fourteen years 2·43, but it appears to be gradually increasing. 9 inches and 90 cents fell last year; most likely this increase is owing to extended cultivation. Sind ulcers appear to be less common than in former years; whether the immunity is owing to the increase in the rain-fall or not, is uncertain. The rain usually falls in July, August, and December. In the hot weather it is most grateful and welcome, as it lowers the temperature for some days. When it rains in the cold weather it is productive of great cold, and consequently increases the sickness. During the year under review 9·90 cents fell, and, owing to the lines being a dead level, the result was that the lines were under water for nearly a month. A good deal of surface water was drained off by the nallahs which ramify through the lines, and there lay stagnant; after some time this water became so offensive that it was advisable to bail it out of the nallahs and allow it to spread itself over the surface. By this means it soon dried up under the powerful rays of the hot-weather sun. No doubt increased rain-fall would have an unfavourable influence on health; there being no drainage, malaria would be freely generated, and stenches abominable to a degree, as the roads become like a rotten dung-hill.

Epidemics.

25. No epidemics have appeared in the regiment. In 1862 two cases of cholera occurred at that time; it was in an epidemic from in district and town. During the last hot weather six cases of measles were treated, but they were very mild and yielded to treatment quickly. The isolated condition of Jacobabad at the period when cholera is prevailing, it being surrounded with water, most likely has played an important part in keeping it away, and interrupting communication from outside.

Vaccination and Re-vaccination.

26. Sixty-one persons were successfully vaccinated during the year; all the doubtful cases were re-vaccinated last year.

General Health and Physique of the Men.

27. The general health and physique of the regiment is most unsatisfactory, and the cause is obvious—long residence in Jacobabad.

Treatment of Diseases when special.

28. None.

Special Observations.

29. Taking into consideration the long residence of the regiment in this most unhealthy and insanitary station, the health, physique, mortality, sickness, and invaliding, all must of a necessity show that the only means by which a better state can be hoped for, is by total change for the regiment to a more healthy climate. Year after year I have advocated this change, and increased experience only tends the more to convince me how necessary and important it is.

Should it be undesirable for other reasons to move the regiment from this station, increased leave to the men would most likely have a good effect. Only 10 per cent. are now allowed to be absent; 25 per cent. ought at least to be allowed.

European officers should be allowed to accumulate their leave for six months; this boon would be of the greatest benefit, and most valuable aid in preserving their health in this deadly climate, and entail no extra expense on the State. The isolated condition of this station and the time it takes to get away from it to a more healthy climate (Kurrachee alone excepted) takes up the extra leave, or nearly so, granted to the Jacobabad garrison, and leaves them on the same footing with the healthiest station in the Bombay Presidency.

Resumé of the whole.

The regiment has been located in the station since it was on service in 1857, and since then 45 European officers have been borne on the muster-rolls of the regiment. Thirty-one out of that number have permanently left the station, transferred, dead or retired, many of them being obliged to give up valuable appointments, their health having broken down—seventeen years in positively the most unhealthy climate in the Bombay Presidency and most likely in India: below is added a table of the yearly mortality, sickness, and invaliding, &c., since then :—

Years.	Strength.	Sickness.		Deaths.			Invalided.	Remarks.
		Daily average Number of Sick.	Percentage of Treated.	In Hospital.	Out of Hospital.	Total.		
1858... ...	470	29·60	158·7	11	...	11	...	
1859... ...	751	34·06	137·68	7	...	7	2	
1860... ...	702	25·58	148·57	3	...	3	1	
1861... ...	450	10·0	123·0	3	...	3	4	
1862... ...	472	19·4	157·2	5	...	5	7	
1863... ...	518	23·9	131·1	7	...	7	9	
1864... ...	510	32·8	149·03	9	...	9	3	
1865... ...	508	27·15	151·6	6	...	6	11	
1866... ...	501	34·6	217·1	6	...	6	26	
1867... ...	501	31·11	169·8	11	...	11	29	
1868... ...	501	25·4	168·4	5	...	5	13	
1869... ...	493	20·9	151·7	11	...	11	13	
1870... ...	498	29·4	291·6	11	1	12	10	
1871... ...	499	14·82	166·20	9	1	10	24	Line sick not included.
1872... ...	503	13·5	187·0	13	...	13	18	
1873... ...	493	14·5	169·5	6	6	12	18	
1874... ...	343	13·3	199·4	7	4	11	20	

Jacobabad, as before mentioned, is situated on low-lying ground with no drainage, watered chiefly from the Indus and from wells. The whole surrounding country is subject to inundation, and, consequently, Jacobabad may be said to be a very hot-bed of malaria.

New lines are being built, suitable in every way, and the conservancy arrangements are carried out on the plan best adapted for such places. Sanitation must be defective here; but were it possible to carry out, which it is not, all the means that improved military hygiene points out, Jacobabad would still maintain its well-won notoriety for being the unhealthiest station in the Bombay Presidency. The water-supply is abundant as a rule. The chief impurities are most likely surface water draining into the wells, dirty habits of the men, decomposing leaves, and nitrate of potash derived from the soil. I have recommended an analysis. The men are warmly and suitably clad for the cold season; in the hot they wear white. Their duties, were they performed in a more healthy climate, could not be considered excessive; but when the climate is taken into consideration the duties no doubt exercise an unfavourable influence on health. Indirectly the same influence prevents their joining in the amusements common to natives.

Cinchonidine.—My experience of this alkaloid is too limited to speak with any degree of certainty regarding its therapeutic value. The few cases I have tried it in, the result was satisfactory, but not so quick in its action as quinine.

Meteorological table for the year is appended.

The extreme and mean thermometer, with the amount of rain for the months of the past year, are as follows:—

Months.	Self-registering Thermometer outside in shade.			Common Thermometer in verandah.			Rain.		Remarks.
	Maximum.	Minimum.	Mean.	Maximum.	Minimum.	Mean.	Inches.	Cents.	
January ...	77	30	53	66	37	51	...	65	During the month dust-storm, and water frozen in cantonment.
February ...	88	37	62	74	48	61	...	5	10th: dust-storm and cloudy.
March ...	98	40	69	86	55	70	...	12	8th, 9th, 21st, 23rd, 27th 28th&30th: dust-storms
April ...	108	52	80	96	66	81	...	36	1st, 2nd and 27th: dust-storms.
May ...	123	58	90	104	73	88	...	9	8th: hot wind.
June ...	127	77	102	108	84	96	...	...	6th: Indus water came in
July ...	111	80	95	104	83	93	4	53	Cloudy and heavy rain.
August ...	113	76	94	97	83	90	4	10	1st: dust-storm, heavy rain.
September ...	113	72	92	94	76	85	...	...	Do.
October ...	109	52	80	90	60	75	...	...	Do.
November ...	94	46	70	78	52	65	...	...	Cloudy.
December ...	88	30	59	72	46	59	...	...	Do.
					Total ...		9	90	

Report on the Sind Ulcer.

The district lies between latitude 27° 56', latitude 28° 27', and longitude 68° 00' and longitude 69° 44', and from east to west is nearly 114 miles long, with an average width of 18 miles.

The general appearance of the district is that of a flat level plain, the whole of which is nearly covered with thick jungle and subject to inundations. The country near the river being higher than the western parts, the slope, therefore, is all in that direction.

One-third of the district is traversed by the Sind Hollow, once the bed of the Indus, and between it and that river the whole country is cut up by "dhunds" and "dhorees", or courses of the floods. The higher tract along the northern frontier has at present a dry and barren appearance, but the soil is alluvial deposit, very rich, and capable of being brought under splendid cultivation. On these plains extensive high mounds, the remains of former towers and villages, are frequently to be seen, attesting the populousness of a race long since passed away. Sand-hills, high and extensive, form a feature in parts of the district. The district is highly malarious. The Sind ulcer, as far as I am aware, is peculiar to this province, met with in all seasons, but more common in the hot. Few people escape on their first arrival, but the acclimatized are not so likely to be attacked. The ulcer, as a rule, is found on the lower extremities, and commences as a small red pimple, which gradually enlarges and ulcerates; the ulcerated surface soon becomes glazed, irregular, with hard red edges, very indolent, with pale unhealthy flabby granulations. As a rule it is not painful, but resists every sort of treatment—soothing, stimulating, strapping alike. If the ulcer comes on in hot weather, it will not heal, as a rule, until the cold and *vice versâ*. It varies in size from a six-pence to that of a crown-piece; when they heal, they leave a copper-coloured cicatrix, which lasts for years, gradually becoming paler with time until at last the cicatrix is quite white. Boils are frequently met here, but they do not appear to differ materially from those met with elsewhere. Europeans suffer more from these ulcers in proportion than the natives; their frequency in the lower extremities is most probably owing to a torpid state of the circulation. It has been advanced that Sind ulcers are produced by sand-flies and mosquitoes depositing their ova beneath the cuticle, but this theory is not reliable evidence, as Sind ulcers often occur when the sand-flies and mosquitoes are not present. The pus from these ulcers is found to be a thin, yellowish discharge with a red tinge. I have not had an opportunity of examining it microscopically. The ulcer could most likely be produced by inoculation; this I have not tried. An ordinary cut is very prone to ulcerate, and assume all the characteristics of the Sind ulcer. Persons in a low state of health are more likely to be attacked, particularly those with a syphilitic taint. It appears to be decidedly endemic, no trade or caste being exempt from it; apparently grown persons suffer from these ulcers more than children. Fortunately we possess a specific for this troublesome disease, and that is change. Immediately a person leaves Sind, the ulcer assumes a healthy character, and heals in a few days—that is to say, in most cases. Increased cultivation here appears to have checked the disease to a certain extent; it certainly does not appear to be so common as formerly. The ulcer is most likely produced by the low state of health, which so many are reduced to in this highly malarious district. The above remarks were made last year in substance, and the only new feature I have observed since, is that officers on leave in India and in England have been attacked with ulcers which presented all the features of the disease as met with here.

H. M.'s 2nd Regiment Sind Horse.

JACOBABAD.—In medical charge of Surgeon BARTHOLOMEUSZ; Strength, 334.

1. Having assumed medical charge of the regiment on October 4th, 1874, my shor acquaintance with the regiment and the station in which it is permanently located, compel me merely to dwell upon facts gained from the regimental hospital records, and offer a few comments thereupon, rather than to enter into any discussion upon the etiology of the prevalent diseases, and suggestions for their prevention, after my very limited personal experience of the regiment, and a station eminently noted for the variability of its climate during different periods of the year.

The average strength of the regiment during the year was 334. The regiment remained in Jacobabad during the whole year, and has not marched out since November 1872.

2. The following detachments were away from head-quarters, and engaged on out-post duty, &c.:—

Káshmor ...	... 40	Poona ...	... 2
Goránári ...	... 40	Toj ...	... 29
Sanri ...	... 29	On patrol ...	... 21
Sui ...	... 80	Escort duty ...	... 22

3. The topography and physical geography of Jacobabad have been so well described, by the senior Medical Officer of this station, for 1871 and 1872 that I cannot do better than refer to his reports for any information on this subject.

4. The geographical position of Jacobabad, situated as it is in longitude. 68° 30' and latitude 28° 17', with an altitude of about 180 feet above the level of the sea, imparts to it a climate characterised by extreme heat during the summer months, which contrasts in a marked manner with the extreme cold of the winter months when the thermometer at its minimum indicates the freezing point or even some degrees below it. During the hot months the heat derived from the direct rays of the sun is greatly increased by the heat afforded by radiation; for the nature of this comparatively flat country, which for miles round is one immense sandy plain, is well suited for the rapid absorption of caloric, and which acts as an indirect source of heat by radiation. Jacobabad, however, boasts of several avenues of trees, which to a great extent protects the pedestrian in the thoroughfare, and probably lessens the general temperature of the station to some extent during the hot season. Proper attention is being paid, so that the rows of trees lining either sides of roads may not interfere with the proper diffusion of air by preventing a free current through them.

5. The regimental lines consist of six parallel rows of huts. Each row consists of 25 rooms on each side, facing east and west respectively, and provided with a verandah on either side. The cubic space of each room is 873 cubic feet, and it has a superficial space of 68·48 square feet. Each room is provided with two ventilators at the roof, and affords accommodation for two men. The men sleep inside during the cold season, and in the verandah during the hot season. The stables are situated between the lines. Proper attention is paid to the cleanliness of these and the lines.

6. The latrines of the regimintal lines consist of six square enclosures built of brick and mud, without a roof or covering above. These are situated between the rows of huts. The system of conservancy adopted here is susceptible of improvement, no receptacle being provided for the reception of the excreta, in consequence of which the soil in the immediate vicinity cannot but be saturated with impurities. Although no ill-effects have hitherto arisen, as far as I can learn, from the present system, and no offensive odour is perceptible in its neighbourhood due to prompt removal of the excreta, morning and evening, still it cannot be disputed that the system is one which should be speedily condemned. The more efficient and satisfactory plan would be to provide each latrine with proper seats, and suitable pans or buckets to receive the discharges, something similar to that adopted by the 3rd Si nd Horse. It is my intention to communicate, at an early date, with the Commandi ng Officer with reference to this, with the view of obtaining his approval and having the suggestions carried out, which would permit the application of the dry-earth system of conservancy according to approved principles.

7. The water-supply for drinking purposes is derived from wells, which, judging by the ordinary methods of observation, though not altogether free of suspended matters, probably vegetable, is comparatively of good quality and ample in supply. It would be interesting to know the actual amount, by analysis, of organic matter in the drinking water of the station, and the part it plays in the production of fever. For six months in the year, when the nallahs are full, the water from this source is used for bathing and washing purposes.

8. Food is plentiful and cheap. A few cases of scurvy have occurred from an injudicious diet, chiefly amongst the men on out-post duty.

9. The men are suitably clad in white clothing during the hot months, and warm cloth clothing with an over-coat of sheep-skin during the cold months.

10. The duties of the regiment consist of the usual routine of drills, parades, and reviews. During the hot weather there are two parades, and in the cold season four parades, in the week. The duties of the regiment, as a source of occupation to the men, is rather conducive to good health than otherwise.

11. There is no gymnasium to afford exercise or amusement to the men.

12. There are neither lock-up rooms nor cells. This important deficiency in the accommodation of military prisoners deserves immediate attention.

13. The regiment did not march out of camp this year.

14. The hospital has accommodation for 16 beds, which allows a cubic spacee of 1,495 cubic feet, and a floor space of 71 square feet per man. The surroundings of the hospital are kept clean.

15. The ventilation of the hospital is perfect during the hot months, when all the doors and windows are kept open; but during the cold months these cannot be kept open to ensure thorough ventilation without exposing the patients to a draught, especially at a season when pneumonia is most prevalent, and the men easily fall victims to it.

16. There is over-crowding during the months of September, October, and November, when fever is most prevalent and admissions into hospital are at its maximum.

17. The hospital is not provided with a dead-house where *post-mortem* examinations of fatal cases may be carried out. This is a great deficiency. The men, I am informed, are always averse to a *post-mortem* examination of their deceased friends, and under existing circumstances an examination cannot be carried out without exposing the process to the public gaze.

There is no bath-room or cook-room in connection with the hospital. These are the most prominent defects in the hospital accommodation which have come within my observation.

18. The dry-earth system of conservancy is carried out in the hospital latrine, which is found to answer very well. But the latrine is so imperfectly provided with means of ventilation, that the atmosphere within is seldom free from the humid and earthy odour due to stagnation of the confined air.

19. The hospital water-supply is derived from the wells already referred to in para. 7, and the same remarks will apply here.

The fact that *malaria* is the greatest enemy the men have to contend against in times of peace, is too obvious to need special mention. Of 375 total admissions, no less than 202 were on account of this affection, which by itself is a sufficient exponent of the highly malarious condition of the station. This circumstance is not to be wondered at when the physical and climatic conditions of the district, supplemented by the periodical inundations of the country around Jacobabad, are taken into account. The alluvial soil highly charged with decaying vegetable matter, the periodical inundations to which it is subjected by the overflowing of the Indus, and the great solar heat, are the three pregnant factors which give origin to this excessive amount of fever of the paroxysmal character.

I am aware that a recent medical writer has endeavoured to prove that there is no such thing as *malaria*, and that all so-called malarious fevers are caused by chills. The greater prevalence of malarious fever during the cold season in Jacobabad may appear to favour the hyphothesis. But a closer observation, and a keener insight into the natural history of the disease, will prove the fallacy of this. That a chill is often the exciting cause of an attack of intermittent or remittent fever, in a constitution already under the influence of malaria, is the more probable theory. And I believe it is generally admitted that a chill, *per se*, without that peculiar state of the constitution previously engendered by the influence of malaria, can no more give rise to intermittent fever than could the mere exposure to a cold draught give origin to enteric fever.

Although my short connection with the regiment and my brief acquaintance with the variable climate of Upper Sind do not entitle my opinion regarding them to that weight which a more lengthened experience would entitle it to, still I may state that, judging from the few opportunities I have had of observing the general feature of the country around Jacobabad, and the valuable fact gathered from the sketch of the medical history of the native army for the last three years, I have arrived at the conclusion, that the conditions which give origin to malarious fever, being chiefly attributable to physical causes peculiar to the locality, are irremediable; and so long as the troops exist here, they must necessarily be exposed to malaria. And the only recommendation which can be offered, under existing circumstances, with the view of preventing the gradual deterioration of the men under the malarious cachexia, is a periodical change to a non-malarious climate.

Pneumonia is the next disease in importance which may be attributed to climatic causes The cold season in Jocobabad sets in about the end of October, and constitutions undermined by frequent and repeated attacks of fever—with enlarged spleen, an impoverished condition of the blood, and a general depression of the nervous system—are ill adapted to withstand the severity of an extremely cold season to which they are annually exposed from October to March. A sudden reduction of the temperature of the body, after an imprudent exposure to cold, when, perhaps, the temperature is almost at freezing point, is probably the most frequent exciting cause of pneumonia in Upper Sind. Some of the men, either from want of intelligence or culpable neglect will not wear their warm clothing betimes, and guard against needless exposure, and this is a fertile cause of the complaint, which is very difficult to prevent.

Temp. Chart of Intermittent Fever.

Bajrang Sing, Sowar, 6th Troop, admitted 30th November 1874. Type – Quotidian; Treatment – Cinchonidine Sulph.

	30th	1st 12-74	2nd	3rd	4th
	M. E.	M. E.	M. E.	M. E.	M. E.
Pulse M.	-	72.	78.	72.	78.
Pulse E.	102	72	78.	78	
Time of Attack	1 P.M.	No.	No.	No.	

Discharged

Temp. Chart of Intermittent Fever.

Gungaram, 1st Troop, admitted 2nd December 1874. Type–Quotidian; Treatment–Cinchonidinia Sulph.

	2nd		3rd		4th		5th		6th																
	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.									
107																									
8																									
6																									
4																									
2																									
106																									
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Discharged

Pulse.	M	102.		90.		78.		78.		72.															
	E.	96.		90.		78.		78.																	
Hour		11 A.M.		No.		No.		No		← Hour of fever															

Temp. Chart of Intermittent Fever.

Bhowance Sing, Sowar 2nd Troop, 5th December 1874. Type-Quotidian; Treatment, Cinchonidine Sulphas.

	5th		6th		7th		8th		9th		10th															
	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.	M.	E.				
107																										
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2																										
97																										
M	90.		84		84		78		72		72															
Pulse E	114		84		84		72		78																	
Hour of Fever.	12 O.C.		No.		No.		No.		No.																	

Discharged

Temp. Chart of Intermittent Fever.

Sowar, Guffow Mohamed, 6th Troop, admitted 7th December 1874. Type-Quotidian. Treatment-Cinchonidina Sulphas.

| | 7th | | 8th | | 9th | | 10th | | 11th | | 28th | | 28th | | 29th | | 30th | | |

Temp. Chart of Intermittent Fever.

Sowar, Khan Mohamed Khan, 6th Troop, 7th December 1874. Type—Quotidian. Treatment—Cinchonidina Sulphas.

	7th	8th	9th	10th	11th												
	M. E.	M. E.	M. E.	M E	M. E.	M E	M. E.										
107																	
8																	
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4																	
2																	
97																	
Hour of Fever	12 O'C	No.	No.	No.													
Pulse. M.	96.	90.	78.	78.	84.												
Pulse. F.	112.	90.	78.	78.													

Discharged for duty

Pneumonia often appears in a latent form—that is to say, a patient comes into hospital and states that he has fever of an intermittent character; on questioning him whether he has pain in the chest or cough, he gives a negative answer; but on examining the chest, according to the usual method, all the signs of pneumonia become apparent, and the diagnosis is usually confirmed by the rusty sputum which subsequently appears in the expectoration. One case, in particular, attracted my attention in this respect. The patient was a native officer who came to me, stating that he had an attack of intermittent fever, for which he received the usual quinine mixture. He saw me again about two days after, and, as he did not appear to be better, I was induced to make a closer examination of the case. He had no enlargement of the spleen or liver, but his general appearance was typical of the malarious cachexia. On examining his chest I discovered pneumonic consolidation of the left lung. This patient became gradually worse, despite every remedy adopted in the treatment, and the case ultimately ended in pneumonic phthisis, which proved fatal on the supervention of obstinate diarrhœa. This patient, from the beginning to the end of his illness, never complained of pain in his chest, and invariably gave a negative answer to my questions in repsect to it. Neither is *dyspnœa* a very prominent symptom, though this is not altogether absent, and becomes more marked as the case advances. This latency of symptoms, which is so apt to misguide one unprepared to meet such cases, is to be attributed to the asthenic state of the constitution of the men, consequent upon repeated attacks of mlaarious fever. This asthenic constitution is a predisposing cause of pneumonia, and occurring, as the complaint does, chiefly in the weak and debilitated by disease or old age, the mortality from pneumonia is necessarily very great, as the stamina required, which would enable the patient to go through the different stages of the disease rapidly on to convalescence, is sadly wanting. Under the head of injuries come contusions, abrasions, and other accidents peculiar to a cavalry regiment. Ulcers not unfrequently result from such accidents as kicks from horses, and I have observed these to take on an unhealthy action, and prove very obstinate to treatment. Whether this ast is to be attributed to the constitution of the patient, or to defective sanitation and atmospheric conditions, I am not as yet prepared to answer. Three cases of dysentery and three of diarrhœa came under treatment, all of which were successfully treated in the usual method. One case of hepatitis was admitted in January, and discharged cured. There were no other admissions from disease of the liver. Of the mortality which occurred in hospital, 5 deaths were caused by malarious fever out of 202 cases treated; 8 from pneumonia out of 24 cases treated, showing the large mortality from this disease; 2 from general debility; and 1 from rheumatism;—making a total of 16 deaths in hospital. The ratio of mortality per cent. to the average strength was 4·8. This compares unfavourably with the ratio of mortality for the previous year, which was 3·2. Twenty-two men were invalided during the year, which is a large number compared with the number invalided in the year preceding, which was 12. Of the cases invalided, 14 were on account of old age and debility, 6 for disease of the spleen, and 2 for rheumatism.

21. The principal causes of sickness are climatic, as already referred to. The comparatively large number of cases classed under "injuries" and "ulcers", caused, for the most part, by accidents from horses, are inseparable from the duties peculiar to a cavalry regiment.

22. The principal causes of mortality were malarious fever and pneumonia.

23. Ratio of mortality per cent. to average strength according to race—Mussulmans 7·6, Hindus 3·8.

24. The amount of rain-fall during the year has been registered as 7 inches 97 cents. Of this amount nearly 7 inches fell in July and August. There was no rain in June, September, October, November, and December. It is a wise dispensation of nature which limits the rain-fall in Upper Sind to only a few inches in the year; for, if it were otherwise, the country would simply be uninhabitable, both on account of insecurity from floods and increase of disease which it would inevitably give rise to.

25. There were no epidemics during the year.

26. Number of primary vaccinations during the year, 72. There were no cases of re-vaccination.

27. With reference to the general health and physique of the men, I have not a favourable account to offer. A regiment which has been constantly exposed to vicissitudes of climate and the baneful influence of malaria, which causes an enlargement of the spleen, impoverishment of the blood, a general depression of the nervous system, and not infrequently deranging the healthy function of the liver, kidneys, and intestines, are not conditions compatible with good health and a powerful physique. The poor physique of the men is a palpable fact; and the only remedy to prevent further deterioration, as I have already mentioned, and

which cannot be too emphatically expressed, is a complete change from Upper Sind to a more healthy climate.

28. The ordinary methods of treatment were adopted in dealing with the majority of cases, and there was no indication for a departure from this line of treatment. The cases of pneumonia required the free administration of stimulants from an early stage of the disease.

While upon the subject of treatment, I beg to refer to a few thermometrical charts annexed, with reference to a few experimental cases of malarious fever treated with the new preparation of cinchona, viz., the *sulphate of cinchonidine*. So far as I may judge from the few cases experimented upon, I have been favourably impressed with the efficacy of this drug. Although it is not probable that it will altogether supersede the sulphate of quinine, still it will bear favourable comparison with it in a therapeutic point of view, and a decided advantage over it in a pecuniary sense. Six cases were treated by the administration of 4 grains of cinchonidine three times a day, and the patients were generally free from fever at the end of three days, and not unfrequently the fever was checked on the first day.

29. Before concluding this report there is one subject, with reference to treatment in regimental hospitals, which cannot be passed over without a few brief remarks—I refer to the absence of any proper system of dieting. The importance attached, in modern times, to the appropriate dieting of patients, especially with reference to pneumonia, is too well known to require special mention. And I have little hesitation in saying that if more suitable arrangements for dieting the patients, according to approved principles, were adopted, the diseases which now swell the rate of mortality would prove more amenable to treatment.

30. There are no pupils in connection with the regimental hospital.

REPORT ON SIND SORE.

Having been in Sind only a short time, I have not had an opportunity of observing the pathological features of this disease.

That injuries, such as those inflicted by horses, proved very frequently obstinate in their recovery, I have had occasion to observe. This I attribute to the peculiar constitution of the inhabitants of this district which the malarious cachexia gives rise to. These wounds generally give rise to ulcers of an indolent character, and merely local treatment does not suffice, but a combined treatment of a local stimulating and an internal tonic, especially quinine and bark.

3rd Regiment Sind Horse.

JACOBABAD.—In medical charge of Surgeon MACRURY ; Strength, 291.

1. The head-quarters of the regiment has been stationed at Jacobabad during the year.

2. Detachments have served at the different out-posts ; strength as under :—

Sui : 80 sabres from 26th January to 19th April.
Sanri : 29 sabres from 22nd January to 19th April.
Goránári : 40 sabres from 16th April to 20th June.
Toj : 29 sabres from 12th April to 27th June.
Káshmor : 40 sabres from 22nd June to 17th November.
Sanri : 29 sabres from 19th June to 12th November.
Sháhpur : 164 sabres from 1st July ; 82 men returned into camp on the 10th of November.
Toj : 29th sabres from 8th November.

3. Jacobabad is situated between 28° north latitude and 68° east longitude, on an alluvial plain 60 miles distant from the nearest hill, has an elevation of 220 feet above the sea, and is about 50 feet below the level of the bed of the Indus at Káshmor. The soil, like the most of the Indus Valley, is composed of vegetable mould-clay and sand, and contains saltpetre and common salt in some of the sandy tracts which are extracted for home consumption and exportation wherever the ground is sufficiently impregnated with them to repay the labour. The water in the canals and water-courses is of a yellow colour from the silt or fertilizing slime suspended in it during the inundation season, but becomes clear on standing, and supplies the wells by soakage. Strictly speaking there is no drainage owing to the level nature of the surrounding country, and water, pure or the reverse, stagnates or finds its level in different parts of camp in tanks and throughout the station in open ditches.

4. The effects of these ageneies on the climate are to render it exeessively hot from the dry nature of the soil and the wide extent of radiating surface, combined with the superincumbent pressure of the atmosphere owing to the slight elevation above the sea-level, depressing and exhausting from the moist state of the air during the inundation season, and malarious from heat, moisture, deeayed vegetable matter, dead fish in stagnant pools and ditches, and defective drainage.

5. The lines are always kept scrupulously clean, and the available space for each man in the pendalls is 72 superficial and 876 cubie feet, with a verandah the area of which is 54 superficial and 486 cubie feet—total 1,362 cubic and 126 superficial feet of space, in which eaeh man keeps his clothes, accoutrements, saddlery, and cooking-pots, and generally aceommodates a syce or two, and oecasionally any of his friends or relations that may visit him. The married men, or rather those encumbered with families, live in separate quarters near the lines, and for obvious reasons are not subject to such close inspection and supervision, so far as their premises are eoncerned, as the bachelors. The pendalls are ventilated at the top by outlets 20 inches square, but as two rows of them are built back to back and under one roof, there is no through ventilation. There is no regimental bazaar ; the station bazaar is under the superintendence of the Brigade Major, and is kept tolerably clean. There are neither villages nor tanks in the neighbourhood of the lines, and merely surfaee drainage by means of open ditches.

6. Three latrines with 12 seats in each have been built since last year, and the contents are removed morning and evening and carted away beyond cantonment limits, where they are partly used as manure by cultivators. The removal of the small latrines from between the pendalls has vastly improved the appearance of the lines, but necessitated the building of a third latrine, as the accommodation that two—one on each flank—afforded, was found insuffieient owing to the number of syces that use them, and the importance of preventing over-crowding and inconvenience before morning parades when there is the greatest rush for a seat. Any serious inconvenience in this respect is now completely obviated, as each squadron has its corresponding latrine eonveniently situated, and the Commanding Officer takes sueh a lively interest in the sanitary arrangements of the eorps as to ensure the eonservancy being well attended to.

7. The water-supply at present is good and plentiful ; but the wells are uncovered, and various kinds of filth are apt to collect in them, such as a black deposit of a very offensive odour, dead dogs and cats, and not unfrequently the drippings from the elothes of natives and their persons may be seen flowing back into the wells at whieh they wash. The probable sources of impurity and contamination, besides the above, are the excreta of the bheesties' bullocks allowed to accumulate near wells, and to soak into the surrounding ground ; tainted mussacks, the same skin being used for different kinds of water, it being impossible to examine or clean them once they are brought into use. I would suggest that all the wells be eleared out, eovered, and hand-pumps used.

8. Hitherto food has been good, abundant, and cheap, but the price has risen of-late owing to the damage done to the crops by the floods and the impassable state of the roads during the inundation season.

9. White clothing is worn during the hot season, or about seven months in the year, and cloth clothing throughout the cold season, with an over-coat of sheep's skin, which ought to be higher in the collar so as to button round the neek, and longer in the sleeves so as to cover the elbow-joint.

10. With the exeeption of men serving on out-post duty, who are weak and anœmie on their return, the duties do not appear to exereise any unfavourable influence on the health of the corps.

11. Beyond their duties, the performance of which entails a considerable amount of exertion, the men do not engage in any special exercise, and the only amusement they indulge in, are feats of horsemanship. Drills, parades, guard and out-post duties fully occupy their time.

12. There are no lock-up rooms or cells. The latter, if built, should, in my opinion, be at least 10 feet square and 12 feet high in the roof, with a verandah on one side and a yard on the other of equal size, both communicating with the cell by means of a door of iron grating. The guard would be accommodated in the verandah, and the prisoner could sleep at night in the yard during the hot season.

13. The regiment has not been marching about the frontier this year, but the 3rd Squadron has been on patrol duty at Shahpur from 1st July till 10th November, when one of the troops returned to camp aceompanied by the hospital assistant, who afforded medical aid to the detachment. One man died from sun-stroke at Shahpur in the month of July, when the heat was very great and the men much exposed to the direet rays of the sun.

14. I forwarded a ground plan of the hospital and surroundings with last year's annual report, and drew attention to its sanitary defects, but nothing has been done in the way of improvements.

15. Owing to the faulty position and construction of the building, and to its being completely shut out from the prevailing wind in the hot season, as I pointed out last year, it may be imagined the ventilation is imperfect.

16. The hospital was over-crowded during the months of November and December only, but not to a serious extent, and only for two or three days at a time, when the verandahs had to be utilised as convalescent wards. I am always careful not to place a patient suffering from fever in the verandah, on account of the tendency to inflammation of the lungs and pleuræ in such cases during the cold season.

17, The site and the buildings are so unsuitable that it would be impossible to improve them successfully or satisfactorily; I, therefore, reiterate what I recommended last year, *i.e.*, that a new hospital on the standard plan, modified to suit the climate, be built on an approved site, with the usual complement of out-houses.

18. The dry-earth system, supplemented by McDougall's powder and carbolic acid, is used with perfect success.

19. The hospital water-supply is ample and good.

20. The varieties of disease in order of frequency were—fever, contusions of the lower extremity, ulcers, boils, and rheumatism. The few cases of dysentery treated were of a mild nature and yielded readily to scruple-doses of ipecacuanha. From the paucity of dysentery cases it may be imagined that there were no cases of hepatitis, the latter disease being frequently the result of the former. The casualties in hospital during the year were 12; out of hospital 4.

At the annual invaliding committee 25 men were considered unfit for further service, 7 for enlarged spleen, 7 for general debility and long service in this unhealthy climate, 4 on account of chronic rheumatism, 3 for defective vision, 2 from ulcers, 1 from tertiary syphilis, and 1 from guinea-worm.

21. The principal causes of sickness in this station are malaria and the vicissitudes of temperature.

22. Remittent fever was the cause of death of 5 of the casualties that occurred, 2 died of ague, 3 from pneumonia, 1 from diarrhœa, and 1 from exhaustion consequent upon tertiary syphilis.

23. Of the cases that proved fatal 11 were Mussulmans and 1 Hindu. The following table will show the sickness, mortality, and invaliding for the last ten years :—

	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.	1874.
Admissions	474	928	845	705	575	905	783	770	786	497
Deaths	3	1	...	3	5	8	5	10	6	12
Invalids	24	19	2	18	9	13	28	34	23	25

24. The rain-fall during the year was 8 inches and 8 cents, the greater portion of which was registered in July and August, when the station was in danger of being washed away. The combined influence of heat and such an unusual rain-fall has been to cause an immense increase of minute animal and vegetable life, and to promote the rapid decomposition of dead vegetable and animal matter, which poisons the still atmosphere peculiar to Upper Sind in the hot season. An indescribable feeling of languor and oppression, both of body and mind, is present when the temperature of the air is higher than that of the human body, and the atmosphere becomes saturated with moisture. Life is only preserved under these circumstances by the heat being carried off in the exhausting perspiration with which we are constantly covered. The muscular system becomes relaxed and defective in tone, and a general obesity of the frame is induced, the heart especially is weak and irritable owing to the activity of the skin, and the mind is unfit for vigorous or sustained effort.

25. The regiment has been free from epidemic disease during the year.

26. Twenty-five cases were successfully vaccinated during the year. A strong and deep-rooted prejudice exists among the married men against vaccination, and it is impos-

sible to know the number of women and female children above ten years of age who are unprotected, as the married men's lines have always been a *terra incognita* to the Medical Officer and his subordinates, and apparently will remain so until new lines on a different system are built, or the light of civilization penetrates into these primitive dwellings, when it is hoped a different policy will be both practicable and acceptable.

27. The anœmic appearance of the men and the frequency of splenitis among them show the disastrous effects of a prolonged residence in this trying climate on their health and physique.

28. Skin-grafting was practised in a case of chronic indolent ulcer of the leg as a last resource, but without success. The ulcer was the result of a dog-bite on the scar of a former sore, and had resisted a variety of local treatment, such as blistering, incision, and approximation of the margins. The man was sent to Hindustan for change of air during the hot season, but ultimately had to be invalided.

29. I may remark in this place that the treatment of cases is extremely discouraging and unsatisfactory owing to the want of control over patients and provision in the matters of diet and nursing. The type of fever is adynamic, and, consequently, tonics, stimulants, and a nutritious diet are indicated. I would recommend that a certain quantity of Leibig's *extractum carnis* be supplied to each corps along with the half-yearly supply of medicines. Australian soups could be imported by Government at a trifling cost and also supplied on indents to Medical Officers, who would, I am confident, find them invaluable adjuncts in the treatment of the generally half-starved native soldier. The amount expended in such necessaries would be more than saved in the pension and gratuity list, as I am convinced that, if the sepoy were better clad and fed and properly housed, there would be fewer discharged and invalided, provided proper precautions be observed in the examination and selection of recruits.

30. It will be seen from the above report that the regiment has suffered severely from disease and death during the year, which can hardly be wondered at when the baneful effects of the climate are taken into consideration, the health of the men having been undermined by long service on the frontier. The only inducement for men to serve in the Sind Frontier Force, is the prospect of early promotion from death vacancies; but they must make up their minds to forego the advantage of change of climate, as the troops located here have not had the privilege accorded to the rest of the native army, of being relieved at intervals of three years. In my opinion the 3rd Sind Horse should be sent away from Sind to the Deccan for change of climate at once, as their lines are more exposed to the floods than those of the other regiments, and narrowly escaped being washed away last year; and, above all, the sickly state of the corps, having been the unhealthiest cavalry regiment in the Presidency in 1873, loudly call for immediate change to the best climate and the healthiest station in the Bombay Presidency.

31. There are no pupils attached to the regiment, but the the hospital assistants receive practical instruction.

Annual Report on Sind Sore for 1874.

During the year 50 cases of ulcers and boils were treated, 31 of the former and 19 of the latter. Both affections are of malarious origin, boils invariably terminating in ulcers, especially if situated on the extremities, which is probably owing to the torpidity of the circulation in those parts.

Slight abrasions and contusions received on parades were followed by suppuration and ulceration, and assumed the morbid character observed in the "Sind Sore", which tends to show that it is produced by impairment of the general nutrition and the disordered state of health induced by climate. This has always been kept in view in treating the affection and tonics administered, whilst the local treatment was conducted on general principles.

REPORT of the MILITARY CHARGES, SIND DISTRICT.

By Deputy Surgeon-General J. R. MILLER, M.D.

Introductory.

The sketch of the sickness and mortality among the native troops serving in Sind for the year 1874 will necessarily embrace an account of the heavy rain-fall and the unusual extent of the annual floods, submerging, as they did, extensive tracts of the province. These have a direct bearing on the health of the troops; for there is an intimate connection between the extent of the

surface-water and the period of its drying up, especially the latter; and the anxious question as to whether the season will be classed among the comparatively healthy ones, or be remembered as one where the hospitals have been filled to overflowing, the death-rate correspondingly high, and the energies and resources of executive Medical Officers and their subordinates taxed to the utmost.

Temperature and prevailing Winds.

2. The earlier part of the hot season of 1874 presented nothing remarkable or out of the course usually observed for that period throughout the province. If anything, the heat less, set in later, and was tempered by strong breezes. Towards the middle of May, however, the winds became variable, light, and at length ceased altogether. From that time until nearly the end of June the atmosphere was almost still, and the heat extremely oppressive. This was partially relieved by cloudy weather and light winds from the south-west, but rain did not commence falling generally till towards the close of July. After this it was frequent, and in many parts abundant, continuing until late in the season.

Rain-fall.

3. The whole province has participated in this rain-fall, which is the heaviest on record since the year 1869. At the three stations where troops are quartered—viz., Kurrachee, Hyderabad, and Jacobabad—the amount registered has been for each respectively, and in the order named, 8 inches 54 cents., 9 inches 98 cents, and 9 inches 90 cents.

Heavy Floods.

4. In addition to this—for Sind—large quantity of rain must now be mentioned the unusually heavy floods, which, occurring about the middle of the monsoon months, added their volume to the already accumulated rain-water, and carried devastation and ruin over large portions of the province. Early in May the Indus began to rise. In June it was very high, and gradually increased during the next two months. Opposite Hyderabad the depth of the river at its highest was 19 feet 6½ inches, and it stood above 19 feet for fourteen days. This is higher by from 5 to 8 feet than the unusually severe inundations which occurred in 1826 and again in 1872. In fact, since our occupation of the country, or for the past 100 years, no such rise in the river has been known. It is not difficult to understand, therefore, how a river, whose mean level is many feet above that of the country through which it flows, should, when overcharged with such a mass of water, spread itself over those parts which lie the lowest, and invade districts, the natural inclination of which invites its progress, and offers no impediment to their total submergence. Had the annual rain-fall been an average one, or even altogether absent, the floods for the past year would still have been unusually severe and extensive; but coming at the time when the country was already saturated, and in some parts streaming with rain-water, especially with the torrents pouring down from the Bolan and Miri rivers,—the whole when united formed an irresistible flood carrying everything before it, and converting large tracts of fertile land into extensive inland seas. It was owing to the combination of these —river-flood and hill-torrents—that the station and town of Jacobabad were for a time in imminent danger of being bodily swept away. And it was only by the foresight, skill and unremitting labour of the Political Superintendent, Upper Sind Frontier, aided by the troops working night and day, that this fearful calamity was averted.

Their progress on right bank of river.

5. The floods, after thus almost sacrificing Jacobabad, next forced their way into the Lárkána Division, lying south-west. These arrived in two separate portions—one from the frontier district, the other from the direction of Káshmor, the latter greatly increased by additions from numerous breaches in the Begári Canal. Eventually this body of water traversed the country lying between the river and the hills to the west, causing the Western Naro to burst its boundaries, and finally joined the Manchhar Lake, which, in its turn, greatly extended its usual limits, thus throwing the whole adjoining district under water.

Their progress on left bank.

6. On the left bank also of the Indus the river discharged a large body of water through the Bawalpore territory and those of His Highness Moorad Ali. The bulk of the flood took the direction of the valley of the Eastern Naro, causing extensive breaches in the various bunds in connection with that river—throwing under water the whole of the district from the 17th to the 79th mile—inundating the country to the south, and completely cutting off all communication with the Thar and Párkar Districts.

Results to Health.

7. What between the floods from the river and the heavy rain, the province of Sind was to a considerable extent under water for several months of the past year. The amount of damage to crops, roads, and villages was enormous, but an account of these does not fall within the scope of this report. It is with the subsidence and during up of the mass of water spread over the country, and the consequences resulting from these as they have affected the health of the native troops at the three stations of Kurrachee, Hyderabad, and Jacobabad, that I have now to consider.

Results to Health.

8. In previous reports when speaking of the peculiarities of Sind as a fever-producing country I noticed that,—given a flat alluvial soil intersected by a large river, which for miles often runs at a considerably higher level than the adjoining district; let this be cut up by countless canals and water-courses, and subject to an annual inundation; let a burning sun fall upon the land during the period these waters are subsiding and drying up; and there exists no manner of doubt that malaria will be generated—in the first instance producing intermittent and remittent fevers, and as the cold season advances becoming complicated with inflammation of the lungs and air-passages or, later on, with dysentery and diarrhœa. If these are the usually expected results of an ordinary year, it is only natural to suppose we should look for their presence in a more aggravated degree after such a season as we have lately experienced. And now let us examine how far this has been the case.

Native Troops and their Distribution.

9. For the year 1874 the distribution of the native troops serving in Sind was as follows:—

27th Regiment N. I.	(1st Beloochees),	Kurrachee.
29th do.	(2nd do.)	Hyderabad.
30th do.	(Jacob's Rifles)	Jacobabad.
1st do.	Sind Horse	Jacobabad.
2nd do.	do.	Jacobabad.
3nd do.	do.	Jacobabad.

10. On the 9th December the 29th Regiment N. I. marched from Hyderabad to Kurrachee, arriving there on the 19th instant. The 27th Regiment N. I. left Kurrachee on the 21st of that month for Hyderabad, and reached that station on the last day of the month. These are the only changes in the distribution of the troops during the year; but, occurring, as they did, quite at its close, they do not affect to any appreciable extent the medical history of these two regiments.

Strength.

11. The total strength of the native troops serving in this province for the year under review is as under:—

27th Regiment N. I. (1st Beloochees)	652
29th do. do. (2nd do.)	636
30th do. do. (Jacob's Rifles)	592
1st Regiment Sind Horse	343
2nd do.	334
3rd do.	291
Total strength ...	2,848

Sickness and Mortality consequent on Floods.

12. For the previous year the total strength amounted to 2,950, a difference of 102. The total treated for that year were 3,903; for the past, 3,541. The deaths were 51 for 1873 and 55 for 1874. On examining the ratios per cent. of treated to strength, of deaths to strength, and of deaths to treated, we find they were for the year 1873, respectively, 135·6, 1·7, and 1·3; and for the past year, 124·3, 1·9, and 1·5. Under this aspect, therefore, there is nothing very remarkable in the sickness and mortality of the troops for the year under review, which would help one in attributing any consequences of a specially bad nature to the unusually heavy floods which overwhelmed the country. Nor, on looking to the annual return (see appendix) where the details of sickness and mortality are fully shown, are there any data availing for making out a case against the floods of 1874, or proving these to have caused any greater excess of sickness, collectively, than did the smaller ones of the previous year.

Malarious Fever chiefly.

13. Malarious fever is the first disease to which attention would naturally be directed; and by a strange coincidence the numbers treated under the head of ague, for the past year, are precisely the same, *i. e.*, 1870, as they were for the previous one. The deaths also are in each case alike, viz., 5. Remittent fever, however, which in 1873 furnished 11 cases with 2 deaths, has for the past year given 18 admissions and 10 deaths, 9 of the latter occurring at Jacobabad out of 15 cases. This would indicate a greater degree of severity in the type of fever; and this is partially confirmed by the deaths from ague being 5—all of them in the Upper Sind Brigade—against 3 for the year 1873, while the admissions for that year were 1,320 against 1,190 for the one under review. In the two Belooch regiments, again, the one stationed at Kurrachee—removed considerably from the malarious influences at work in other parts of Sind—suffered very slightly from fever, 112 cases only having been treated; whereas the 29th Regiment, quartered at Hyderabad, returns 568.

14. So much for malarious fever. And now with regard to diseases of the digestive and respiratory systems, which are so intimately connected with causes at work in producing the class of fevers just mentioned; as also greatly aggravated by sudden changes of temperature, especially when associated with damp and moisture. In the first division are diarrhœa and dysentery; in the last, bronchitis and pneumonia. The former are chiefly met with in the autumn months, when the waters are drying up; the latter in the cold season. And it is from the diseases named under these two heads that the greatest number of casualties are met with among the troops in Sind. During 1873, diseases of the digestive system gave 349 cases and 6 deaths. For 1874 they numbered 280 with 7 deaths. Following the same order, there were 193 cases and 25 deaths, against 166 cases and 22 deaths, from diseases of the respiratory system. And in selecting the typical affections—*i. e.*, diarrhœa and dysentery—the former year gives 61 and 81 cases with 2 and 3 deaths respectively, against 65 and 67 cases, and 3 deaths to each for the latter. And for the other division, taking bronchitis and pneumonia as the most common and fatal, we have of the first, for 1873, 103 cases, and of the last 67, showing 3 and 21 casualties respectively; while for the year now under notice, bronchitis furnished 82 cases and 1 death, and pneumonia 65 cases followed by 21 deaths. While diseases of the digestive system, therefore, show fewer admissions during the past year, the ratio of deaths to treated has been higher. But in diseases of the respiratory system the rate of mortality is the same for both years. On the whole, therefore, I do not think it can be shown that the heavy floods of 1874—unprecedented as they were—have to any material extent influenced the frequency or termination of diseases of the bowels, and certainly not of the lungs. And this is rendered all the more apparent when it is remembered that the year 1873, with which a comparison is instituted, was considered above the average in healthiness. The only solution of this and the one which most readily presents itself, is found in the fact that large tracts of the country were under water during the time the sun's rays had the greatest power. This restricted the development of malaria, and diminished the tendency to bowel complaints. And when the winter months arrived, there was still so much water and moisture on the surface, that the sudden alternations of temperature between day and night were to a considerable extent equalized. The cold season also—at least in its earlier part—was remarkable for its mildness; and the usual period for affections of the lungs was hereby materially shortened.

Also Diseases of the Digestive and Respiratory Systems.

15. Having thus briefly sketched the history of the last year's floods, and endeavoured to show how far these have affected the general health of the native troops compared with that of the previous year, I proceed to notice in detail the diseases observed among them, number of admissions, average daily sick, deaths, and various other particulars, so as to give a connected medical account of the troops,—first in their collective, and second in their separate capacities as divided into regiments, staff, and details.

16. As mentioned in para. 11, the total strength of the troops serving in Sind during the past year was 2,848—less by 102 than for the previous year. The admissions numbered 3,459, or, with those remaining at the close of 1873, a total of 3,541 were treated; died in hospital 55; died out of hospital, *i.e.*, in the lines, on furlough, or otherwise unknown, 22; average daily sick, 84·9; ratio per cent. of treated to strength, 124·3; of deaths in hospital to strength, 1·9, and to treated, 1·5; ratio per cent. of deaths out of hospital to strength, 0·7. There were 147 men invalided, and 52 given temporary leave for the benefit of their health. On an average as many as 711, or a percentage of 24·9, were absent on leave; and during the year 282 recruits have been added to the strength.

Details of Sickness and Mortality.

17. As was noticed on a former occasion, there exists a marked difference in the manner in which some regiments are affected in different years, without apparently being greatly influenced, favourably or otherwise, by causes which on theoretical grounds would be expected to produce their ordinary results. And this can be best seen where several regiments are quartered at one station. The 27th Regiment presents, comparatively, a small sick list; 502 against 608 were treated, and the deaths were only 2 against 9 for the previous year, which, as I have already shown, was considered a healthy one. The 29th Regiment was not so fortunate. The mortality was trifling, being only 0·3 per cent. to the number treated, but the latter amounted to 820. The strength of these regiments are nearly alike. But even this proportion of sick to strength is distanced by the 1st and 2nd Regiments Sind Horse. The admissions in the first were 671, in the other 497—their strength being 343 and 291 respectively. This gives a ratio per cent. of 195·6 and 218·3 admissions to the average strength of each. And, then, again at the same station we find the 2nd Regiment Sind Horse with only 375 admissions and the 30th Regiment N. I. with 627; the strength of the former being 334 and of the latter 592, or showing a ratio per cent. of 112·2 and 104·2 admissions to strength.

Disparity in different Regiments.

18. The difference in rate of mortality also in the regiments at Jacobabad is worthy of notice. The 1st Sind Horse shows 7 deaths; the 3rd Regiment 12, *i.e.*, a ratio of 2·0 and 4·1 per cent. to strength. In the 2nd Regiment Sind Horse the casualties amounted to 16, and in the 30th Regiment N. I. to 15; the ratio per cent. to strength will, therefore, be 4·1 for the former and 2·5 for the latter. As a rule, it is admitted that like causes produce similar effects; but this evidently has not been the case at Jacobabad for the past year. And it is difficult to understand why four regiments, all equally circumstanced as regards location, climate, supplies, duties, and other matters, should present such striking differences in their proclivity to disease, as also the tendency in some more than others for their affections to run a protracted and severe course, and even to terminate fatally. When the several regiments come to be considered, some explanation may be found in their mode of living, prevalence of one caste over another, the system of recruiting in particular, hospital management, and the like.

Syphilis.

19. On reference to the annual return of sick at the end of this report, the diseases for which the troops have been treated are shown in detail, and I need only, therefore, rapidly summarize these. It will be seen that neither cholera, small-pox, nor other epidemic disease have been met with. A few cases of measles—and that in only one regiment at Jacobabad—were observed. General diseases, Division A, furnish, of course, the largest number of cases, for it is under this head that ague and remittent fever are shown,—1870 of the former with 5 deaths, and 18 of the latter with 10 deaths. The next, Division B, includes rheumatism and syphilis; 71 cases of the former are given, of which 53 are debited to the Upper Sind Brigade. Of syphilis there are recorded 63 cases—46 of these being shown for the two Belooch regiments. That the 17 remaining cases do not by a long way represent the amount of this disease prevailing in the four regiments at Jacobabad, needs no argument to prove. The 1st Regiment shows only 3 cases, the 2nd Regiment 3, the 3rd Regiment 2, while the 30th Regiment N. I. records 9. This state of things is very similar to what I brought to notice in my report for 1873, para. 9, where I have given what appears to me a reasonable explanation of this anomaly. My visit to Jacobabad, last January, confirmed me in the opinion I then formed, and which I believe to be correct.

20. Diseases of the nervous system, which are the next in order, may be passed over without comment—the cases occurring under this head being of no importance.

21. So also with regard to diseases of the eye—simple conjunctivitis being almost the only affection met with.

Respiratory System.

22. I have already anticipated nearly all that is necessary to record under the head of diseases of the respiratory system. Of the 82 cases of bronchitis, 42 of them—singularly enough—are returned by the 27th Regiment N. I. stationed at Kurrachee. Pneumonia again—65 cases with 21 deaths—is entirely confined to the Upper Sind Brigade; the 3rd Regiment Sind Horse, however, suffering the least of any. Pleurisy, excepting in one case, attacked only the men of the 27th Regiment N. I. There were 5 admissions from this affection, but no casualty.

Digestive System.

23. Diseases of the digestive system present nothing noticeable beyond 67 cases of dysentery—11 for each of the Belooch regiments and 20 in the 1st Regiment Sind Horse. Next, diarrhœa, 65 cases, of which 11 were in the 27th Regiment, 20 in the 29th Regiment, and 25 in the 1st Regiment Sind Horse. Colic furnishes 67 cases—34 of them being from the 27th Regiment. The only other affections requiring notice are 13 cases of splenitis and 17 of lardaceous spleen—the latter all returned by the 30th Regiment N. I.

Urinary Organs and Generative System.

24. Diseases of the urinary organs and generative system show 32 cases of gonorrhœa, of which 26 are from the 2nd Belooch Regiment, 13 cases of bubo, and 17 of orchitis, few or any of these last being returned by the Regiments Sind Horse.

25. Abscess 49, and dracunculus 10, are given under the next head—diseases of the cellular tissue; while in the one following—diseases of the cutaneous system—ulcers number 103, and boils 166. Under these last are included the affections known by the various names of "Sind sore", "Delhi boil or sore", "Aleppo evil", &c. These are peculiar to Upper Sind, and it is from the regiments stationed at Jacobabad that the bulk of admissions from these troublesome sores are met with. I attach special reports in connection with this disease from each of the Medical Officers on the frontier.

Injuries.

26. Injuries comprise all the remaining affections which require to be noticed among the troops as a body. Their number is considerable—amounting to 422—but their importance is trifling, not a death having resulted from any of them. Contusions are, of course, the most prominent, and which generally

are confined to the mounted branch, but for the past year the 27th Regiment N. I. monopolizes quite double that of any other regiment. On referring to the returns of that regiment these seem to consist chiefly of abrasions caused by badly-fitting shoes, and the new gaiters in use, which appear to gall the men's legs. This matter was noticed in last year's report when commenting upon the numerous contusions in the 27th Regiment N. I.

Vaccination.

27. Vaccination has been fairly carried out in the infantry regiments, and with better success than hitherto in those of the Sind Horse. Re-vaccination, however, meets with great opposition, and is, as a rule, uniformly resisted. One regiment only, the 30th N. I., shows any cases, and these are but 10.

Staff and Details, Kurrachee.

28. The staff and details are located at the two principal stations in Sind—Kurrachee and Hyderabad. At the first reside the head-quarters staff of the district, with the Ordnance and Commissariat Departments. The strength of European officers has been 15; of the warrant and non-commissioned officers 8. The fighting men—native—of the Ordnance numbered 111; of the Commissariat, 485. On the whole these have been healthy, except among the children, some of whom died from diphtheria and typhoid fever. One European adult, a serjeant of the Ordnance Department sent from Hyderabad, died from dysentery. Another fatal case was that of the Inspector-General of Musketry, who died suddenly from heart-disease. Three officers under the Sind Command were sent to Europe for the benefit of their health. Seven natives belonging to the Commissariat and Ordnance Departments died in hospital.

Staff and Details, Hyderabad.

29. The strength of the European officers belonging to the staff at Hyderabad was 9, of the European warrant and non-commissioned officers 10, and of the native fighting men—lascars of the Ordnance Dapartment—100, besides followers. From January until September the health of the staff and details was of an ordinary character. After this, however, sickness began to show itself, and rapidly increased in frequency and severity. This was mainly confined to the warrant and non-commissioned European officers, their wives and families, and also to the lascars of the Ordnance Department and their families, all of whom resided within the Hyderabad Fort. The sickness was a fever of malarious origin, but owing to local and other circumstances assumed a low adynamic type, in some cases with typhoid symptoms, followed by great prostration, and a fatal issue in 7 cases. So constant, universal, and serious was the sickness which laid hold upon nearly every one living inside the fort, that the Staff Surgeon wisely applied to the Officer Commanding to have them all removed outside, which was at once effected. In the case of 20 men and their families it was found necessary to remove them quite away from Hyderabad, and the were accordingly sent—first to Kurrachee and afterwards to Bombay.

Insanitary condition of the Fort.

30. In consequence of this severe sickness and the unfavourable report, made by the Staff Surgeon, of the unhealthiness of the fort, I was ordered by the Brigadier General Commanding the district to proceed to Hyderabad and examine and report—first upon the causes which had led to the outbreak of fever, and, secondly, the remedial measures required to place the different buildings, offices, lascar lines, &c., in a good sanitary condition. With reference to the first point, I stated that I did not consider the term "outbreak of fever" as strickly applicable to the sickness described by the Staff Surgeon. The past season, towards its latter part, had proved an extremely sickly one throughout Sind. Hyderabad showed this in a remarkable degree. From enquiries I made I found malarious fever was very prevalent in the town. In the civil hospital the out-door patients for the month of October were nearly double the number met with during the corresponding month of the previous year. In the 29th Regiment N. I. situated on the dry *plateau*, and where sanitary measures are looked after, the number of of sick—chiefly fever cases—had amounted during the same month to 264, giving a daily average of 64 sick. This is more than twice the number treated in the month of October 1873. A similar increase had been witnessed at the General Hospital; the number admitted during October having amounted to 157, the daily average of sick being 42. And in the fort, considering the relative number of its residents, the proportion of those affected were even still higher. All this went to show how prevalent and widely-spread sickness had been in Hyderabad during the autumnal months. This sickness—one of malarial origin resulting from the excessive overflow of the river—had been experienced in all directions, and even where sanitary conditions, as in the Belooch lines, were good. It would have been strange, therefore, if the malaria had passed over the fort without causing its presence to be felt; and stranger still, if—after a heavy rain-fall added to the almost total absence of anything approaching the name of sanitation—the persons affected in it should have been few in number, or the type of disease otherwise than severe. It was owing to the insanitary condition of the fort, therefore, aggravating and intensifying the malarial poison everywhere present, and not to any special "ontbreak of fever", that the increase of sickness and the gravity of the fever-type brought to notice by the Staff Surgeon were to be attributed.

Recommendation.

31. Regarding the second point, I was directed to report upon, viz., the remedial measures required to place the different buildings, &c., in a good sanitary state, these are so numerous, and embrace so many matters of pure detail, that any lengthened account of them would be out of place in a report of this kind. It will be sufficient to mention that I fully endorsed all the Staff Surgeon had stated in reference to the filthy condition of the fort. The state of things presenting themselves to more senses than one, was not the result of a few weeks' or months' neglect or ignorance. It was the fruition of years, the practical outcome of a long continued course of inattention to even the first principles of sanitation, and all the important questions for good or evil following the observance or neglect of its rules. Matters had been allowed to proceed too far to talk now of remedial measures, except of the most sweeping kind, to effect anything like a radical or permanent cure for the evils lately witnessed. These might be held in partial abeyance in hot and dry seasons, but would certainly always recur with more or less fatal effect once the ground inside the fort became saturated with rain. One of my recommendations, which I considered of paramount importance, was the entire demolition and removal of the lascar lines, which are built on the site of the old camel lines dating back to the time of the Ameers, and occupying a low-lying hollow to which much of the drainage of the fort gravitates; as also of the ruined huts in their rear, with their decaying roofs, rubbish, and filth of all kinds. This measure would, of course, entail great expense, as the men and their families must necessarily be provided with quarters elsewhere; but as this would still leave those of the warrant and non-commissioned officers unremedied, the question assumes an important aspect, and gives rise to the enquiry—whether it would not be more advantageous to the State, now that railway communication connects Kotri with Kurrachee, to remove the whole of the arsenal to the latter place, and thus obtain, not merely a radical cure for the insanitary condition of the fort, but obviate the necessity of maintaining so many European troops at so unhealthy a station as Hyderabad?

27th Regiment or 1st Beloochees.

32. This regiment having been stationed at Kurrachee until the 21st December, when it marched to Hyderabad, has enjoyed excellent health—better even than for the previous year, the report for which was considered satisfactory. For both years the strength was alike; and while the admissions for 1873 were 655, they amounted to only 490 for the past year. The deaths also were considerably fewer—being 2 only for the past year, whereas for the previous one they numbered 9. No deaths occurred out of hospital or while on leave. The average daily sick likewise shows well as compared with 1873—being 11·9 against 13·7. The ratio per cent. of treated to strength was 76·9 of deaths to strength 0·3, and of treated 0·3. These rates will compare favourably with those of regiments in the best stations of the Presidency. The proportion of Mahomedans to Hindus in the regiment is as 5 to 1, but the ratio of admissions of the two classes are upwards of 8 of the former to 1 of the latter.

33. There were 6 European officers borne on the strength of the regiment. Only one of these has been reported sick.

Sickness and Mortality.

34. The diseases most frequently witnessed, and arranged in their order of frequency were malarious fevers 115, contusions—chiefly shoe-bites and abrasions—107, affections of the respiratory organs 46, and of the digestive system 88. Of the cases of fever, all with the exception of 3—which were remittent—assumed the intermittent type, and the Medical Officer in charge reports that these were for the most part treated by the hypodermic injection of quinine, which affected an easy cure. The two casualties recorded, were occasioned by remittent fever and chronic diarrhœa.

Invalids, Recruits, &c.

35. As many as 25 men were sent up to the last invaliding committee, but only 7 of these were recommended for pension. The recruits for the year numbered 75, of whom 55 were Mahomedans and 20 Hindus. Taken as a whole, the general health and physique of the regiment are good. The duties are not severe, and are confined to the usual parades, guards, &c. Gymnastics and regimental exercises are encouraged, and conduce greatly to the health of the men.

Hospitals.

36. The hospital belonging to this regiment has been noticed in previous reports. It may fairly be called good. Its only objection is, that it is rather too close to the Commissariat lines. It is, however, to windward of them; and only in the cold season, when the breeze comes from the north and north-east, does the vicinity of these affect the sanitary condition of the hospital, and even then only to a trifling extent. The accommodation under ordinary circumstances is ample. A dead-house is greatly needed, as also extra quarters for the 2nd class establishment. These desiderata were noticed before, but nothing has been done in either direction. There is room for improvement in the conservancy of the hospital latrine, which is described as being on the dry-earth system; but this is carried out in rather a desultory and not too satisfactory a manner, and would be the better of greater supervision.

37. The lines, which are the old European depôt barracks, continue to give satisfaction. The fears which existed, previous to their being made over to the regiment, of the probability of their retaining the germ of typhoid fever and communicating this disease to the sepoys, have proved quite unfounded. The thorough sanitary measures which were adopted beforehand have entirely removed all apprehensions on this score, and the lines are perfectly healthy. Accommodation is more than is required, and ventilation is sufficient. The drainage, although only surface, is satisfactory—the buildings being on a slight elevation. The regimental latrines are at a considerable distance from the water supply. They are emptied twice daily, and the night-soil is removed in an iron tank-cart and buried in pits.

Lines.

38. The annual report for this regiment has not been received up to date (12th April) from Surgeon-Major Morton in medical charge although called for on several occasions since it was due on 1st January last.

29th Regiment N. I. (2nd Beloochees).

39. Owing to the unusual amount of sickness this regiment had experienced—chiefly from fever—during the past year while stationed at Hyderabad, I carefully inspected it when on my visit to that station in November last. The men as a body have been well selected, and when in health present a fine appearance; but owing to malarious cachexy, which to a greater or less extent has pervaded all ranks, their physique has become somewhat deteriorated. A reference to the general return shows that the regiment suffered severely from malarious fever—exclusively ague. The total treated from this disease amounted to 568, which is five times more numerous than for the other Belooch regiment, and double that of any of the corps at Jacobabad, except the 1st Sind Horse, which returned 438 cases. The chief brunt of the disease extended over the months of September, October, and part of November. The type was not particularly severe, as is shown by no cases of remittent fever and no casualties. The causes for this heavy fever-return are to be found in the unusually high floods which prevailed, added to a large rain-fall. These matters are more fully alluded to when speaking of sickness, which so severely affected the staff and details at Hyderabad. The regiment, although for a time rendered inefficient, was able to march from Hyderabad to Kurrachee, arriving at the latter station on the 19th of December last; and already the good effects of the complete change have become visible in the altered appearance of the men for the better.

Suffered severely from Fever.

40. Beyond the great prevalence of fever, this regiment, whose average strength was 636, has been comparatively free from other diseases. Compared with others, it shows unfavourably in the matter of syphilis, 17 cases of the primary and 8 of the secondary affection being recorded; but as regards the regiment at Jacobabad, I shall have occasion, when commenting on this disease, to take exception, not to its absence in these regiments, where, I believe, it exists quite as much as elsewhere, but to its apparent immunity as shown by the returns. Diseases of the respiratory organs furnished 17 cases, of which 13 were from bronchitis, followed by 1 death. One fatal result attended a solitary case of enteritis, and out of 8 cases of dysentery 1 also terminated fatally. Of the remaining diseases of the bowels there were 20 admissions from diarrhœa, but none others of importance. The list is nearly completed by 17 cases of gonorrhœa, 5 bubo, 25 boils and ulcers, and 43 injuries, among which is a fracture of clavicle.

Other Diseases.

41. The mortality in the regiment amounted to only the above-mentioned 3 cases (they were 7 for the previous year), which gives a ratio per cent to strength of 0·4, and of deaths to treated of 0·3. Out of hospital 4 deaths occurred, but of these I have no account.

Mortality

42. This regiment is composed chiefly of Mahomedans, there being only 92 Hindus borne on the rolls. Of the recruits who joined during the past year, 23 were of the former class and 7 of the latter. All the men invalided, and they amounted to 24, were Mahomedans.

Castes, Invalids, Recruits.

43. Thirty-six children were successfully vaccinated and 25 persons were re-vaccinated with a favourable result.

Vaccination.

44. The lines are unchanged. These are good, clean, and well ventilated, and the position excellent, but they are too small. Each sepoy has only 704 cubic feet of space; while the quarters assigned to the native commissioned officers are also far too cramped. There is no provision for ventilation, and as these men are mostly married, their rooms are close and unhealthy.

Lines.

45. In former reports the faulty position and construction of the hospital have been frequently mentioned. It is far too close to the lines, is on a slightly lower level, without a plinth, a mud floor, and low walls. Were it not that, as a rule, the accommodation is ample, it must have been abandoned long ago. The Brigadier-General Commanding, when

Hospital, faulty in position and construction. Recommendation.

on his late inspection tour, was equally struck with its defects, and proposed to me to have an exchange effected with the general hospital. This last building is large and roomy, raised on a high plinth, well ventilated, and stands well out in the open. It is not above half a mile from the Belooch lines; and as the sick of the staff and details who are admitted into it, are few and unimportant, and are likely to become even more so if the arsenal should be removed to Kurrachee, I quite concurred with the Brigadier-General in his proposal, and the exchange is to be carried out.

Drainage.

46. The position occupied by this regiment being elevated, and the ground a mixture of sand and lime-stone, little artificial assistance is given or required to ensure drainage. Water is seldom seen to lie in or near the lines or hospital.

30th Regiment N. I. (Jacob's Rifles). Sickness and Mortality. Invalids.

47. This regiment has been without change of any kind since last report. For the past and previous years the strength and number of admissions have undergone no variation. The deaths, however, which in 1873 amounted to 11, have for the past year numbered 15—8 from among the Mahomedans, whose admissions were 300, and 7 from the Hindus, from whose ranks 327 were admitted into hospital. Of the casualties 1 was occasioned by remittent fever, 1 from dysentery, 1 from diarrhœa, another was the result of enteritis, and 5 proved fatal from pneumonia. The daily average number of sick was 20, an increase of 4 from the previous year. The ratio of treated to strength was 109·1, of deaths to strength 2·5 against 1·8 for 1873, and of deaths to treated 2·5 against 1·6 for the previous year. The fever cases were not so numerous during the year under review, being 249 to 316 for 1873, but the type was more severe, and was frequently attended with diarrhœa, causing great debility. Affections of the lungs furnished 40 admissions, half of them being pneumonia, and often supervening on fever. Of these cases 5 terminated fatally. Bowel affections gave 48 admissions. These occurred chiefly during the period the country was under water, and caused 3 casualties. Ulcers and boils peculiar to this part of Sind returned 80 cases, and proved extremely obstinate, a favourable action being observed only on the advent of the cold weather. In 1873 there were 31 men invalided. For the past year this number has been greatly exceeded,—49 out of 50 brought before the committee having been recommended for pension. The Medical Officer states that a large number came to the regimental committee, seeking pension or discharge, which he attributes to the dread the men have of serving in Jacobabad. The proportion of Hindus to Mahomedans is 257 of the former to 335 of the latter; and on examining the rate of admissions and mortality for the two classes, it is seen that the Hindus suffer more severely than the Mahomedans. The ratio of admissions per cent. to strength of the former was 123·8 for the past year, and the deaths to strength 2·7, whereas for the latter these were, respectively, 83·3 and 2·2.

Physique.

48. The health and physique of both classes are much below what they ought to be, and these cannot be expected to alter for the better while the regiment is retained always at Jacobabad. The duties are represented as being light, and such as exercise no unfavourable influence on the health of the men. Regimental gymnastics are kept up. These are compulsory; but many of the men, particularly the younger portion, need no coercion, and take to it willingly.

49. The European officers have numbered 5. All have been fairly healthy.

Recruits.

50. There have been 52 recruits added to the regiment during the year. I cannot speak very favourably of them.

Hospital.

51. This regiment has the advantage of possessing an entire hospital to its own use. It is well situated, and the ventilation also is good, but it is much too small. Not including the verandahs, there is accommodation for 20 patients. During the hot season this is sufficient, but in the sickly months, when the number of beds required varies from 50 to 60 and upwards, the inconvenience is very great. A new hospital on a larger scale has, I believe, been sanctioned, which is very necessary. During the winter months the patients complain bitterly of the cold, and their recovery, especially when suffering from lung diseases, is seriously retarded. Government has, I am glad to say, sanctioned my recommendation for a certain quantity of wood to keep a stove burning between November and February of each year.

52. The hospital latrine is in great disrepair, and this is alleged as the reason for its conservancy being far from satisfactory.

Lines and Conservancy.

53. The men's lines were formerly described. The accommodation is ample, but ventilation has been overloaded. The pendalls are sadly in need of verandahs to keep off the afternoon sun. Regimental latrines are on the old system. Contamination of the neighbouring soil is inevitable; fortunately there are no wells in the immediate vicinity, and the ground is too level for drainage to point in their direction.

54. While the head-quarters of this regiment have not been moved during the past year, still on an average some 95 men have been always away on out-post and patrol duty. Owing to the severe heat, the flooding of the country, and the cold winds in the winter months, these duties are found very harassing, and tell severely on the health of the regiment. The mortality has been smaller than in any of the other regiments stationed in Upper Sind, amounting to 7 out of a strength of 343, which gives a ratio per cent. of 2·0; but the admissions were considerably higher than in the others. These numbered 671, showing a percentage of 199·7 to strength. This is one-sixth more than was observed for the previous year. Much fever has been met with, chiefly in the months of September, October, and November. The treated from this cause alone were 441, against 334 during 1873, one casualty occurring in each year. Diseases of the lungs furnished 17 cases of pneumonia, of which 5 proved fatal. Dysentery, the type of which was mild, takes the most promiuent place in diseases of the digestive organs. There were no deaths, but 20 admissions from this disease out of a total of 38 cases. Boils and ulcers are as usual represented—23 of the former and 19 of the latter. With reference to these, the Medical Officer observes, they appear to be much less common than in former years. Injuries were numerous, but of trifling consequence, except in the case of one man who was killed on parade from the effects of a fall from his horse.

1st Regiment Sind Horse.—Sickness and Mortality.

55. Primary vaccination was performed in 61 children without a single failure, which is certainly remarkable. Two infants remain unprotected. Re-vaccination was not attempted. It is a matter of sufficient congratulation to have accomplished even this much among the children. Re-vaccination, it is hoped, will follow in course of time.

Vaccination.

56. As many as 20 men were granted leave on account of illness for periods varying from one to six months. Out of these 7 were invalided in addition to other 13, pronounced unfit.

Invalids.

57. During the year, 37 recruits joined the regiment.

Recruits.

58. The European officers present were 5. None of them have been more than temporarily sick.

59. Unlike the 2nd and 3rd Regiments Sind Horse, which share a hospital between them, this regiment has one to itself. It is well ventilated, and tolerably roomy, accommodating 20 patients irrespective of the verandahs; and since the addition of a stove, absolutely necessary during the cold weather, it is comfortable enough. Its great defect—and which is common to the others at this station—is its position, which is right between the horse lines and the married men's quarters, or, what is quite as objectionable, blocks of dooly-bearers' huts. The building was clean and in good repair.

Hospital.

60. With regard to the remark of the Surgeon in charge, that the conservancy is carried out on the dry-earth system *supplemented* with McDougall's powder and carbolic acid, and that the plan works well, I must be allowed to observe that the dry-earth system stands in need of no adventitious assistance. In itself it is perfect. To require the aid of two powerful disinfectants is equivalent to admitting the failure of the system as carried out at his hospital, and that he is obliged to have recourse to these to remedy errors and evils resulting from it, which ought to have no existence if the principles on which alone disintegration and deodorization take place are recognized and acted upon. The use of disinfectants in latrines should be interdicted altogether, and be reserved exclusively for employment inside the hospital, and the "supplement" spoken of might be with advantage exchanged for the more obvious and necessary one of *increased supervision* on the part of Medical Officers, subordinates, and hospital servants.

Hospital Latrine.

61. The lines of the regiment, which are similar to those of the 2nd and 3rd Regiments, are almost finished. These are excellent and well ventilated. No provision, however, has been made for saddles and horse accoutrements, which should be kept somewhere else than in the men's rooms.

Lines.

62. On the completion of the new lines it is to be hoped that the objectionable system of regimental conservancy hitherto prevailing will be abolished, and in place of the six open latrines ranged down the centre between each troops, and by which the ground becomes impregnated with filth, new ones may be constructed on each flank of the regiment, as has been done lately with excellent results in the 3rd Sind Horse.

Regimental Conservancy.

63. With the exception of furnishing detachments for the out-posts, averaging from 30 to 80 men, at each of the five stations they are required at, the 2nd Regiment Sind Horse has not moved out of camp for the last two years. The total treated amounted to 385 which is 300 fewer than for the 1st Regiment, and is at the rate of 115·2 per cent. to strength

2nd Regiment Sind Horse.—Sickness and Mortality

but while the deaths in that regiment were but 7, in the one now under notice they numbered 16. This exceeds by 1 that of the 30th Regiment N. I., whose strength is 258 greater. The ratio per cent. of deaths to strength is thus brought up to 4·7, and of deaths to treated to 4·1, which compare unfavourably with the ratios under these heads for 1873, which were 3·2 and 2·4. The causes of this severe mortality were malarious fever and pneumonia. From the former 5 men died, from the latter 8 out of 24 cases treated; 2 occurred from general debility and another from rheumatism. The daily average of sick was 8·8. Four men—Mahomedans—died out of hospital, 1 from pneumonia on out-post duty, the other in Hindustan. One Hindu also died on furlough. Fever cases were not numerous for a regiment at Jacobabad. They amounted to 207; but the mortality from this cause, as I have already mentioned, was large—5. Stomach and bowel affections were few in number and without a casualty. Injuries were not of frequent occurrence, and none of them were serious. Of ulcers 28 cases were treated. Most frequently these were the result of previous boils, but they were observed also to follow slight abrasions and trifling accidents, assuming generally an unhealthy action, and taking on the distinctive appearance of the "Sind sore," and proving very rebellious to treatment.

Vaccination.

64. Out of 72 cases of primary vaccination 70 were successful. There was no re-vaccination.

Invalids. Recruits.

65 During the year 22 men were invalided, which is nearly double the number for the previous year. A total of 56 recruits was brought on the strength of the regiment during the months of April and October.

Duties.

66. The duties required of the men are similar to those in the other regiments. In the cold season four parades a week, and in the hot only two. The poor condition of the men, therefore, cannot be attributed to their duties being harassing or fatiguing.

Hospital; insufficient accommodation.

67. The position of the hospital is bad, owing to its proximity to the lines and the absence of sufficient space around. Buildings of various kinds are much too near. There is accommodation for only 16 beds. This does not include the verandahs, in which 6 or 8 more can be received, but with inconvenience. As in the 1st Regiment this deficiency is not felt so severely as it would be at other stations, owing to the practice, still prevailing, of suffering men who are not seriously ill to attend as out-door patients. In the hot months also patients could not remain in hospital during the night; but it is in the autumn months when fever is at its maximum and also in winter when shelter is required to guard against pneumonia that the want of proper accommodation is experienced. A dead-house, cook-room, and the enlarging of the latrine are all likewise needed. With regard to the latter, it was clean; but dry-earth conservancy, as in all others, is imperfectly carried out.

Lines, Conservancy.

68. The lines, as previously reported, are new, excellent, well ventilated, and the accommodation sufficient. Sanitary arrangements, however, are defective in two respects: (1) no separate place for the men's saddles and accoutrements; (2) the latrines—3 in number—merely simple open enclosures placed between the row of huts. These should be removed and proper latrines built on either flank of the regiment.

3rd Regiment Sind Horse.

69. On examining the returns of sickness and mortality for this regiment during the past year, and comparing them with those of the other two mounted corps, it will be seen to approach the 1st Regiment in the matter of numerous admissions, and resemble the 2nd Regiment in its high rate of mortality. Its average strength was 291, and the treated 503, giving a ratio per cent. of 172·8. The deaths in hospital were 12 double those of the previous year. This shows a percentage of 4·2 of deaths to strength.

Duties.

70. The regiment was not absent from Jacobabad during the year, but it has furnished its usual quota to the various out-posts in the district. These men are for the most part observed to be weak and anœmic on their return. Beyond these duties, the performance of which, the Surgeon in charge states, entails a considerable amount of fatigue, the usual routine work of the regiment does not appear to exercise any unfavourable influence on the health of the corps.

Sickness and Mortality.

71. The admissions amounted to 497, of which 299 were from malarious fever, resulting in 7 deaths. Pneumonia occasioned 3 casualties out of 7 cases treated, dysentery gave 8, and diarrhœa 5 cases with 1 death. The bulk of the remaining diseases was boils and "Sind sores", admitting 50 patients; and injuries, a common occurrence in a mounted corps, for which 65 were treated, but none of them serious. The average daily sick was 9·4. Four deaths occurred out of hospital. Of these 3 took place in Hindustan, and 1 was occasioned by sun-stroke on out-post duty.

72. The invalids numbered 25—all Mahomedans but 1. The regiment, as is the case with Sind Horse generally, is mainly composed of this class, but of the recruits who joined during the past year 18 were Hindus out of a total of 35 enlisted. No European officers have required to leave the station on account of ill-health. Their strength is 6.

Invalids, Recruits, Caste.

73. In vaccination 25 successful cases have been reported. This is one more than for the preceding year. Of re-vaccination there has been none; nor is anything known accurately in reference to the number of unprotected persons belonging to the married portion of the regiments. As this applies, more or less to all three regiments, I would invite attention to the remarks made on this point by the Surgeon in charge—article 26 of his report.

Vaccination.

74. As regards the hospital of this regiment, I need say nothing. All that is necessary to bring to notice in respect to it has been already mentioned when speaking of the hospital of the 2nd Regiment. In previous reports I have shown that one roof covers them both; or, to be more correct, a building suited only to the wants of one regiment has had a partition-wall run up in the middle, and one half allotted as an hospital to the 2nd Regiment, the remaining portion being given over for a similar purpose to the 3rd Regiment. In former days, when men of the Sind Horse unfit for duty—unless, perhaps, from wounds received in action—were regarded with scant favour, and accommodation other than for such as were seriously ill was not deemed a matter of very great importance, this limited amount of hospital accommodation may have sufficed; but according to present ideas, and the advances made of late years in medical science, hygiene sanitation and other collateral branches, all bearing directly on the prevention and cure of disease, the time has, I trust, arrived when reasonable hospital accommodation will be provided for these two regiments, and which can only be done by building a new hospital for one or other. And when the climate of Jacobabad is remembered, and the sickly condition of the men of both regiments, I hope it may not be deemed as over-impertinence on my part if I respectfully urge the new building being commenced at once.

Hospital, insufficient Accommodation.

75. While thus far supporting the Medical Officer in charge of this regiment in his remarks in connection with the difficulties attending vaccination among the families, and the necessity for a new hospital, I regret I cannot endorse his observations concerning the dry-earth system any more than I did when commenting on the same subject in connection with the hospital latrine of the 1st Regiment.

Conservancy.

76. The men's lines need no further description than I have already given in my separate reports for the years 1872 and 1873. They were clean and in good repair. Accommodation outside is required, as in them all, for the troopers, saddles, and horse trappings, which it is an unhealthy practice to stow away in the men's quarters, and which are sufficiently limited as it is.

Lines.

77. The objectionable arrangement, which until very lately has existed, of the privies for the regiment running down between the rows of pendalls, has been abolished. Three commodious and well-arranged latrines have been built for the regiment a little beyond the lines; and the conservancy of these, though not on the dry-earth system, is satisfactorly attended to.

New Latrines.

78. Having from the date of my first visit to Upper Sind been thoroughly convinced that, owing to errors in the method of recruiting for the troops at Jacobabad extending over many years—to their cachectic condition, the result of malarial chronic poisoning, unrelieved by even a temporary removal from what, in the memorandum of the Army Sanitary Commission on the report of the Sanitary Commissioner for Bombay for 1873, is stated to be "the most unhealthy large station" in the Bombay Presidency, "showing a death-rate of 21·1 per 1,000" (for the last year this has reached 32·0 per 1,000); and believing that, unless these troops are allowed to breathe a comparatively pure atmosphere in some less malarious station for a space of at least two years, their physical condition will continue to deteriorate, showing a corresponding proclivity to sickness with gradually increasing death-rate. I have considered it my duty in each successive annual report to urge the necessity of withdrawing the whole of the troops from Jacobabad and supplying their place temporarily with others. If this were done, we should soon have, I believe, a greatly reduced rate of mortality at this much-maligned station; for it is not, perhaps, so much owing to its being so infinitely worse than all others, as to the simple fact that the men residing there are so reduced in vital energy and stamina that they are unable to withstand and ward off the injurious effects of the climate which men of more robust constitution would endure with comparative impunity.

Errors made in recruiting for Troops at Jacobabád.

Inspection of Troops.

79. To satisfy myself with respect to the physique and general appearance of the troops at this station, and to prevent myself being led away by the opinion of, perhaps, prejudiced parties, the Commandant Sind Field Force was good enough at my request to have the whole of the troops drawn up in their ordinary attire for my inspection. I had thus an opportunity of seeing all the fighting men at Jacobabad, recruits included, and comparing the condition of one regiment with another.

30th Regiment N. I. (Jacob's Rifles).

80. In the 30th Regiment N. I. (Jacob's Rifles) the proportion of Hindus to Mahomedans is as 2 to 3. Both classes were below par. A few fine men were to be seen, but many presented an unhealthy, sickly appearance, and not a few were poor, weedy-looking creatures. The recruits also were far from good.

1st Sind Horse.

81. In the Sind Horse the Mahomedan caste greatly predominates. The proportion to Hindus is, for the 1st Regiment, 11 to 1; for the 2nd, 6 to 1; and for the 3rd Regiment it is as 1 to 7. The physique and general appearance of the men of the 1st Regiment were by no means satisfactory. Although, as a body, they are inferior to the 30th Regiment N. I., yet they showed the best of the three regiments of Sind Horse. Many of the recruits were under-sized, ill-made, and they left anything but a favourable impression on my mind.

2nd Sind Horse.

82. As regards the recruits of the 2nd Regiment, I am constrained to say that a more miserable and unpromising batch of men to be converted into soldiers I have seldom seen. Indeed, the low physique and weakly appearance of the entire regiment struck me forcibly. In these respects they were decidedly the worst of any at Jacobabad.

3rd Sind Horse.

83. With some slight variation I have not a very much better report to give of the men of the 3rd Regiment. Walking down the ranks and looking at each man as I passed along; there appeared to me a wonderful resemblance in them to those of the regiment just noticed. If anything, they were better; still it was painful to see so many of their number showing the usual faulty conformation resulting from feeble parentage and poor living, added to want of wholesome and regular exercise during their earlier years. All this was self-evident by the number of narrow-shouldered, pigeon-breasted, thin, flabby-looking men in the ranks. Of course, there were exceptions, and I could have picked out a score or two of fine-looking fellows who would have done credit to any corps; but, viewed as a body, their general physique was very indifferent. The recruits, save perhaps half-a-dozen, presented all the peculiarities I have mentioned in a marked degree. This regiment, therefore, in point of physique and general appearance, may take an intermediate place between the 1st and 2nd Regiments.

Opinions resulting therefrom.

84. So far as the opinion and judgment of one individual may be considered to have weight, the observations just now recorded will be estimated at their proper value. I will only add, however, that, during my lengthened service, opportunities of judging correctly on the comparative merits of a native sepoy or trooper, apart from his intellectical qualifications, have not been wanting. I would refer also to the expressed opinions, as given in their reports, of each of the Medical Officers serving with the regiments at Jacobabad, that I have not exaggerated the inefficient condition of the troops in Upper Sind as compared with that of others elsewhere.

Comparative Sickness of Troops and Townspeople at Jacobabad.

85. But in what direction shall we look for an explanation of this very unsatisfactory state of things, or to what cause is it to be attributed? To say that it is all owing to climate, and that Jacobabad is the most unhealthy station under the Bombay Command, is a statement easily made; but has it been proved, or are the circumstances under which troops are allowed to remain there until they die, a fair or reasonable method of demonstration? No one will be found bold enough to extol the climate of Jacobabad as otherwise than inimical to Europeans; nor does it require a residence there from June to October to convince the most sceptical of the fact. But the point I am considering at present is, not how it affects Europeans, but natives. This we have seen as regards the men of the several regiments. But how about the people of the country, and the residents in the town of Jacobabad? On visiting the large dispensary lately built, I found but 3 patients inside, and the daily average of in and out-door sick had been only 26·6 for the past year. This dearth of patients was said to be owing to the works at present under construction at Kâshmor having attracted large number of the people; but on going through the town it did not appear deserted, nor did the population strike me as

less than usual. Excluding police and prisoners, the total treated for the year amounted to only 2,376. From this number, as shown in previous reports of the dispensary, it is usual to deduct from 40 to 50 per cent. on account of outsiders, kafilas, and travellers from foreign territory. There remains, consequently, some 2,000 persons as the proximate number of sick out of a population of 5,205. Is it not, therefore, reasonable to assume that, if the townspeople—and these include women and children who are not shown for the troops—were as sickly and below par as are the fighting men, that they would apply for medical relief in proportionate numbers, especially when this is accorded gratuitously and without question to all and sundry ?

Sickness alone of Troops not conclusive for reputed unhealthiness of Jacobabad.

86. If this conclusion be allowed to be reasonable, it follows as a necessary consequence that, while the climate of Jacobabad is unquestionably bad and trying even to the native community, the large amount of sickness and high rate of mortality, as witnessed year after year, among the troops composing the Upper Sind Brigade, cannot of itself be put forward as incontestible proof of the exceptionable unhealthiness of the station of Jacobabad. This has still to be proved, therefore, and until this is done our judgment should be suspended.

Chief fault explained in the badness of Recruits.
Recommendations for a better supply.

87. The facts, however, in respect to the sickness and mortality of the troops are indisputable. Some of the hitherto supposed causes are questionable, and the field for enquiry is thus considerably lessened. We must, therefore, seek for an explanation in other directions. To employ a simple simile. If our bread is found uniformly bad and uneatable, it would be hardly fair to lay the whole blame on the oven, however badly constructed or unequally the heat were distributed. Naturally we should not rest satisfied until we had examined and tested the materials used in the baking. Apply this to the matter in hand. Are we altogether justified in attributing the sad condition of the troops at Jacobabad solely to its deadly climate, and without further question to decide that their heavy sick-roll and high death-rate would be the normal condition of any other body of men who might be sent there in their stead? Before coming to this conclusion it would be well for a little to consider (1) the quality of the original materials, *i.e.*, the recruits exposed to the action of the climate; (2) what becomes of these after a long-continued exposure to annually-recurring morbific influences? With reference to the first point, I cannot do better than quote the following passage from the sanitary report of Surgeon Byramjee for 1871. This officer was several years at Jacobabad, and was thoroughly acquainted with the system he describes. He says—"The recruits—more particularly for the Sind Horse—are of the worst type, physically speaking, of any I ever saw during my service in the army. Large numbers of them are under age, undeveloped, and weedy children of men who have served and got deteriorated in constitution in this climate; children, in fact, born with seeds of disease in them. Many candidate recruits were brought before me who had the spleen large enough to be pronounced a sufficient cause for invaliding. Though the worst are rejected by the Medical Officer, (some of them were enlisted in spite of such objection,) still the average of those admitted would not have a chance were better men brought forward." The late orders for confining the source of recruits to the Presidency to which a regiment belongs, excludes all comers from Central India and the Punjab. The regiments, therefore, have to depend for supplies upon Sind, the Konkan, the Southern Mahratta Country, and those born in the regiment—generally the worst of all. Good men in Sind do not, as a rule, present themselves for service at Jacobabad, and those brought by the regimental recruiting parties are for the most part poor wretched creatures, the refuse, apparently, of the rising population. To choose a healthy well-knit youth, one likely to develop into a robust and profitable soldier, requires almost as much knowledge as does the selection of a good serviceable horse; but what special fitness do the parties possess who are entrusted with this important duty? Next to none. A certain number of young men they know they must bring back with them; this much they generally accomplish. Committees also have the power of rejection, but of this, apparently, they do not often avail themselves; and once passed on to the regiment, the new hands are absorbed and the mischief is begun. It is not that well-formed young men, strong and active, especially among the Mahomedans, are not to be found. During my tours throughout Sind I have seen hundreds of such; and I have sometimes asked them why they did not take service with the "Sirkar" and enlist into a regiment. Their replies were not very consistent or satisfactory; but they mostly went to show that the service was not popular, the pension rules apparently being the chief grievance. If these were altered so as to allow of a sepoy claiming, as his right, a small pension after, say, 10 to 15 years' service, without—as he often does—having to feign some disease in order to obtain it, with other modifications for further service, a much better feeling than at present exists, would, I think, soon become manifest, and a class of men greatly superior to those now met with would come forward. And in place of employing the present native recruiting parties who return with so many failures, would it not be more economical

and far more satisfactory to depute the superintendents of vaccination to turn to account the numerous opportunities they have, when travelling through their districts, to select fit subjects for the army? As they could on the spot subject these to a medical examination, this would at once do away with the fear, many candidates have, of being rejected by the committee, and having a long journey for nothing.

Importance of more careful selection.

88. With regard to the second point—the future career of the weedy, ill-developed recruits once fixed at Jacobabad—the medical history of the regiments will, I think, sufficiently show. The climate is against his improvement; his vitality, as years go on, gets reduced; his proclivity to disease is increased; and he becomes susceptible to causes which, had he been a healthy, strong man at the outset, would pass him by untouched. How essential is it, then, that more than ordinary care should be taken in the selection of the men, who are expected to become and to continue efficient soldiers in a climate said to be so unhealthy as Jacobabad.

Failing this—removal of Troops only remedy.

89. But if the system of recruiting now prevailing is still to be adhered to, I see no reasonable prospect of arresting the steady progress of deterioration going on among the troops at Jacobabad, but by removing them for a few years out of the heat and malaria abounding in Upper Sind to a more healthy climate; and by letting it become generally known that they would take their turn with other mounted corps at the other cavalr stations in the Presidency, the dread of permanent service at Jacobabad, which at present undoubtedly prevails, would pass away, and a better and more efficient class of men would readily be found. A process would thus be commenced, of building up these regiments with new and healthy material by the yearly infusion of fresh and vigorous blood. For a more extended view on these and kindred matters in connection with the troops at Jacobabad, I would refer to my remarks in my annual report for the year 1871.

Saving to Government from discharge of Leechmen and Dhobies in Upper Sind Brigade.

90. By Government Resolutions Nos. 2184 and 2593, Military Department, dated, respectively, 11th and 17th June 1874, the leechman and dhobies of the 30th Regiment N. I. and also of the three regiments Sind Horse, which had hitherto been maintained at an annual cost to Government of Rs. 864, were ordered to be discharged; leeches and washing being obtained as required from the bazaar, and the expenses met by the Commissariat Department. The plan has been found to answer perfectly. In the 30th Regiment N. I. no leeches have been used from 2nd August to 31st December. In the 1st Regiment Sind Horse, for the last six months of the year, 54 were applied, costing Rs. 3-6-0; in the 2nd Regiment none; and in the 3rd, none. The cost of washing during the same period was, for the 30th Regiment, Rs. 12; for the 1st Sind Horse, Rs. 23-6-0; for the 2nd Regiment, Rs. 20; and for the 3rd Regiment also Rs. 20; making a total under these items of Rs. 78-12-0, thus effecting a saving to Government of Rs. 353-4-0 for the half-year.

Recommended also for the two Belooch Regiments.

91. Leechmen and dhobies are still entertained in the two Belooch regiments, no orders having been received for their discharge. But after the success attending the new arrangement at Jacobabad, and which has been accomplished at no sacrifice of efficiency, I see no reason why it should not be extended to the other regiments also.

Water-supply for Troops in Sind.

92. The subject of the water-supply for the troops in Sind need not occupy many lines. In my report for the year 1872, I described this as fully as the means at my disposal admitted, and there is little or nothing fresh to record in respect to it. Survey and estimates are being made for bringing water into Kurrachee from the bed of an adjoining river; but so many schemes of this description have been undertaken up to this point and afterwards relinquished, that it would be premature to speculate on the issue of the present one. At Hyderabad, however, matters are more hopeful. The works in connection with the plan for lifting the Indus water up to the level of the town and camp are now in progress, and are being pushed vigorously on under the able superintendence of the Local Fund Engineer, who promises in a couple of years to have the whole scheme in thorough working order. At Jacobabad, what with the heavy floods, the numerous canals and water-courses fed by the Indus, and the water everywhere within 8 feet of the surface, there is no difficulty so far as relates to quantity; but as it is only from the wells that water is obtained for drinking purposes, that in the nallahs being used for bathing and washing, the usual amount of impurities

from casual infiltration of sewage, dripping from the persons and clothes of those frequenting them, and suspended matters, mostly of vegetable origin, added to a certain quantity of earthy and saline substances—all these may be looked for in greater or less abundance in the ordinary drinking water of the station.

Lock-hospital, Kurrachee.

93. No better or more suitable building being procurable at the limited rent allowed for the lock-hospital at Kurrachee, the house which has hitherto been used for this institution has been retained. The accommodation and general arrangements need not be again described, as these were fully gone into in my report for 1871. No alterations have been made since. The premises are clean and in tolerably good order. The results for the past year have been more favourable than for either of the two preceding ones. At the close of 1873 there were 173 women on the register; 54 have been added since. The names of 66 have been removed, 2 of the number having died, but not in hospital, and 161 were on the register on the 31st December last. Surgeon-Major Style, who has been in charge, reports that the women have been more regular in their attendance; that the numbers found diseased at the periodical examinations have been fewer; and that the type of disease witnessed has been generally of a mild character. The number treated—165—appears large compared to the average strength for the year, which was 186; but this is explained by several of the women being detained for observation where doubts existed with respect to their being diseased. The attendance has averaged 157, against 144 for the previous year. Those reported for non-attendance were 33. The fines levied and realized on this account amounted to Rs. 53-11-0. The number found diseased at the examinations were 13·4, which compares favourably with the year 1873, when these numbered 19. The benefits resulting from maintaining this hospital in mitigating the virulence of venereal disease, as shown by the diminished frequency of admissions among the European and Native troops, has been well marked during the past year. The artillery left Kurrachee on 15th November, which slightly affects the returns; but while the average of cases for the past three years has been 135, the total admissions for 1874 were only 83. This is divided among the troops as follows:—

	European.	Native.	
Syphilis, primary	27	9	
Do. secondary	6	7	
Gonorrhœa, &c.	25	9	
	58	25	Total 83.

Four ships of the Persian Gulf Squadron were also at Kurrachee during a portion of the year, and the commanding officers reported that they had never known their men enjoy such an immunity from disease at any port they had previously visited. Syphilis among the women is chiefly confined to young girls who have only lately commenced to practise their trade. The older women are said to be either more careful or less susceptible to disease. There is only one woman on the register at present who is considered to be incurable; and she is reported to be so saturated with disease, that she again and again becomes a source of infection from accidental causes developing the poison in her system into an active condition. The Medical Officer has forbidden her living in camp, but the police have no jurisdiction in the matter. Clandestine prostitution is said to be on the decrease in consequence of the registered women giving information regarding others to the hospital dhaies, who report the matter to the Superintendent of Police. If reliable evidence is obtained of the fact, these women are sent by the Cantonment Magistrate to be examined at the hospital, and subsequently undergo registration. In spite of all these precautions, however, secret prostitution prevails more or less, and from this practice it is that much of the disease met with is propagated. With the view of obviating this evil the Medical Officer suggests that the Superintendent of Police should insist upon his subordinates promptly substantiating evidence against suspected characters, and also that they should at once give notice of all new arrivals at the haunts of public women, as such are frequently found diseased. It would likewise be advisable, in case where suspicion is not confirmed by actual proof, that a certain quiet surveillance should be exercised by the police in communication with the dhaies. In this manner many women will be discovered secretly practising their calling without being subjected to the salutary measures resulting from periodical examinations.

94. No money allowance is made to the women in hospital. Subsistence is supplied by the Commissariat Department on a daily requisition. The cost for natives is 2 annas 6 pies each per day; for Europeans and Eurasians it is 6 annas, but these last are seldom or ever required.

Lock-hospital for Hyderabad recommended.

95. I would strongly recommend the establishment of a lock-hospital also at Hyderabad. The means of communication between that city and Kurrachee are now so frequent and easy, that women are constantly coming from the former to the latter, and leaving again as soon as their doings at Kurrachee are beginning to attract attention. Fresh disease is thus often imported, and greatly counteracts the benefits resulting from the hospital there. On other grounds likewise I would advocate the opening of an institution of this kind at Hyderabad. At that station there are 3 companies of the 56th Regiment and a battery of artillery, numbering some 360 Europeans; in addition to which there is the Belooch regiment. On the other sids of the river, just opposite Hyderabad, lies the town of Kotri, where nearly 150 Europeane connected with the railway and flotilla reside. The Civil Surgeon there reports that syphilis, and that of a bad type, is rife, and is increasing. No doubt the presence of the Europeans and the Belooch regiments attract women to both these places. Disease is the necessary consequence, and the absence of all surveillance offers no check to its propagation and all its subsequent evils. To insure a lock-hospital being of any real benefit to Hyderabad, it would be necessary that Act XIV. of 1868 should be made to embrace, not only the town of Hyderabad, but of Kotri also.

APPENDIX A.

ANNUAL RETURN of Native Troops in the Sind Division for the Year ending 31st December 1874.

Regiment, &c.			27th Regiment N. I. Hyderabad.		29th Regiment N. I. Kurrachee.		30th Regiment N. I., Jacobabad.		1st Regiment Sind Horse, Jacobabad.		2nd Regiment Sind Horse, Jacobabad.		3rd Regiment Sind Horse, Jacobabad.		Total.	
Strength.			652		636		592		343		334		291		2,848	
			T.	D.	T.	D.	T.	D.	T.	D.	T.	D.	T.	D.	T.	D.
General Diseases.	A.	3. Chicken-pox	1	...	...	...	...	...	...	...	...	...	...	...	1	...
		4. Measles	...	...	...	...	...	...	6	...	...	...	...	...	6	...
		12. Febricula	...	...	...	...	...	...	...	...	...	...	1	...	1	...
		15. Ague	112	...	568	...	256	...	438	...	204	3	292	2	1870	5
		16. Remittent fever	3	1	...	...	2	1	3	1	3	2	7	5	18	10
		21. Mumps	2	...	...	...	...	...	3	...	...	...	...	...	5	...
	B.	34. Acute rheumatism	...	...	8	...	2	...	3	...	...	...	...	...	13	...
		38. Chronic ,,	7	...	3	...	14	..	13	...	11	1	10	...	58	1
		43. Syphilis, primary	4	...	17	...	...	...	...	...	3	...	1	...	25	...
		A. Soft chancre	9	...	...	...	6	...	...	...	...	...	...	...	15	...
		B. Secondary	8	...	8	...	3	...	3	...	...	...	1	...	23	...
		54. Scurvy	...	...	1	...	4	1	3	...	...	..	2	...	10	1
		37a. Lumbago	1	...	1	...	8	...	...	...	1	...	1	...	12	...
		43. Syphilitic iritis	2	...	...	...	...	...	...	...	...	...	1	1	3	1
		45b. Fibro-cellular tumour	..	...	1	...	...	...	...	...	..	...	...	...	1	...
Diseases of the Nervous System.		66. Sun-stroke	...	...	...	...	2	...	...	...	...	...	...	...	2	...
		85. Hemiplegia	...	...	...	...	..	...	1	...	...	...	...	...	1	...
		86. Paraplegia	...	...	...	...	1	1	...	...	...	...	...	...	1	1
		93. Epilepsy	...	...	...	...	...	...	1	...	...	...	...	...	1	...
		101. Neuralgia	...	...	...	...	2	...	2	...	...	...	...	...	4	...
		101b. Brow-ague	...	...	...	...	1	...	...	...	...	...	1	...	2	...
		101c. Sciatica	...	...	..	...	4	...	...	...	2	...	..	...	6	...
		105. Mania	...	...	...	...	...	...	...	...	...	...	1	...	1	...
		106. Melancholia	...	...	...	..	...	...	...	...	...	...	2	...	2	...
Diseases of the Eye, &c.		111. Conjunctivitis	17	...	20	...	10	...	10	...	6	...	5	...	68	..
		129. Opacity of cornea	...	...	...	...	1	...	...	...	...	...	...	...	1	...
		136. Iritis	...	...	...	...	...	...	1	...	...	...	...	...	1	...
		128. Ulcer of cornea	1	...	...	...	...	...	...	...	1	...	...	...	2	...
		132. Staphyloma	...	...	...	...	1	...	...	...	...	...	...	...	1	...
		165. Nyctalopia	...	...	...	...	...	...	...	...	...	...	1	...	1	...
		169. Inflammation	1	...	...	...	...	..	...	...	...	...	...	...	1	...
		190a. Acute inflammation	...	...	...	...	1	1	1	...	...	...	1	...	3	1
		192. Accumulation of wax	...	...	2	...	...	...	...	...	...	...	...	...	2	...
		205a. Deafness, nervous	...	...	...	...	1	..	...	...	...	...	...	...	1	...
		213. Epistaxis	...	...	...	...	...	...	...	..	...	...	2	...	2	...
Diseases of the Circulatory System.		219. Pericarditis	1	...	...	...	..	...	...	...	...	..	.	...	1	...
		244. Palpitation of heart	1	...	...	...	...	...	...	...	...	...	...	...	1	...
		266. Varicose veins	...	...	...	...	2	...	...	...	...	...	...	..	2	...
Diseases of the Respiratory System.		293. Laryngitis	...	...	...	...	1	...	..	...	...	...	...	...	1	...
		306. Bronchitis	42	...	13	1	17	...	2	...	4	...	4	...	82	1
		314. Ashma	4	...	3	...	...	...	...	...	1	...	...	...	8	...
		315. Pneumonia	1	...	...	...	20	5	17	5	20	8	7	3	65	21
		325. Pneumonic phthisis	...	...	1	...	2	...	...	...	...	...	...	...	3	...
		331. Pleurisy	5	...	...	...	1	...	...	...	...	...	...	...	6	...
		305. Bronchial catarrh	...	...	...	...	...	...	...	...	1	...	...	...	1	...
Diseases of the Digestive System.		349. Ulcerative stomatitis	...	...	1	...	...	...	...	...	...	...	...	...	1	...
		350. Thrush	1	...	...	...	...	...	...	...	...	...	...	...	1	...
		366. Caries	..	...	...	...	...	...	...	...	...	...	1	...	1	...
		377. Gum-boil	4	...	...	...	7	...	...	...	...	...	...	...	11	...
		421. Ulcerated sore throat	...	...	...	...	...	...	1	...	2	...	...	...	3	...
		422. Quinsy	...	...	...	...	...	...	...	...	1	...	...	...	1	...
		419. Sore throat.	1	...	...	..	...	...	...	...	...	...	...	..	1	...
		423. Tonsillitis	1	...	...	...	...	...	...	...	...	...	...	...	1	...
		424. Sloughing sore	...	...	1	...	...	...	...	...	...	...	...	...	1	...
		460. Dyspepsia	6	...	...	...	...	...	...	...	...	...	...	...	6	...
		464. Enteritis	...	...	...	...	1	1	..	...	...	...	...	...	1	1
		466. Dysentery	11	...	11	2	8	1	20	...	9	...	8	...	67	3
		480. Hernia	1	...	...	...	...	...	...	...	...	..	...	...	1	...

Regiment, &c.		27th Regiment N. I. Hyderabad.		29th Regiment N. I., Kurrachee.		30th Regiment N. I., Jacobabad.		1st Regiment Sind Horse, Jacobabad.		2nd Regiment Sind Horse, Jacobabad.		3rd Regiment Sind Horse, Jacobabad.		Total.	
Strength.		652		636		592		343		334		291		2,848	
		T.	D.	T.	D.	T.	D.	T.	D.	T.	D.	T.	D.	T.	D.
Diseases of the Digestive System—*continued.*	484. Diarrhœa	11	1	20	...	25	1	3	...	1	...	5	1	65	3
	486. Colic	34	...	9	...	12	...	9	...	2	...	1	...	67	...
	487. Constipation	...	...	...	...	2	...	..	...	...	...	...	...	2	...
	489. Abscess of the anus	...	...	...	...	..	...	...	..	1	...	...	...	1	...
	490. Fistula in ano	...	...	...	...	1	...	...	...	..	...	...	...	1	...
	491. Hœmorrhoids	6	...	3	...	...	..	...	..	...	...	1	...	10	...
	501. Hepatitis	...	...	1	...	...	...	...	...	...	...	...	...	1	...
	504. Simple enlargement	...	...	1	...	...	...	...	...	...	...	...	...	1	...
	513. Jaundice	...	...	...	...	1	...	...	...	1	...	...	...	2	...
	526. Congestion	...	...	...	...	...	...	...	...	1	...	2	...	3	...
	524. Splenitis	1	...	1	...	...	...	6	...	...	...	5	...	13	..
	529. Lardaceous spleen	...	...	...	...	17	...	...	...	...	...	...	...	17	...
	532. Ascites	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Diseases of the Urinary System.	550. Calculus, renal	...	...	...	...	1	...	...	...	...	...	...	...	1	...
	554. Suppression of urine	...	...	...	...	1	1	...	...	...	...	...	...	1	1
	577. Retention of urine	1	...	...	...	...	...	...	...	...	...	...	...	1	...
	538. Albuminuria	...	...	...	...	...	...	...	...	...	...	1	...	1	...
Diseases of the Urinary Organs.	585. Gonorrhœa	9	..	17	...	6	...	...	...	...	...	...	...	32	...
	587. Phimosis	..	...	...	...	1	...	..	...	...	...	...	...	1	...
	588. Paraphimosis	1	...	1	...	1	...	...	...	1	...	...	...	4	...
	589. Bubo	2	...	5	...	2	...	...	...	2	...	2	...	13	...
	591. Epididymitis	1	...	...	...	...	...	...	...	...	...	...	...	1	...
	593. Condyloma	1	...	...	...	...	..	...	...	...	...	...	...	1	...
	601. Extravasation of urine	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Diseases of the Generative System.	620. Orchitis	7	...	4	...	3	...	1	...	1	...	1	...	17	...
Diseases of the Organs of Locomotion.	812. Enlarged knee	...	...	1	...	...	...	...	...	...	...	...	...	1	...
	817. Ganglion	1	...	...	...	...	...	...	...	...	...	...	...	1	...
Diseases of the Cellular Tissue.	819. Abscess	7	...	11	...	11	...	2	...	10	...	8	...	49	...
	823. Hœmorrhage	...	...	1	...	...	...	...	...	...	...	...	...	1	...
	825. (5) Dracunculus	1	...	3	...	1	...	...	...	1	...	4	...	10	...
Diseases of the Cutaneous System.	827. Erethema	...	...	1	...	...	...	...	...	...	...	...	...	1	...
	830. Urticaria	...	...	...	..	1	...	2	...	...	...	...	...	3	...
	838. Psoriasis	...	...	...	...	1	...	...	...	...	...	...	...	1	
	841. Herpes	...	...	...	...	1	...	1	...	1	...	...	...	3	...
	843. Eczema	...	...	1	...	5	...	3	...	...	...	5	...	14	...
	859. Ulcer	10	...	12	...	3	...	19	...	28	...	31	...	103	...
	861. Boil	21	...	13	...	80	...	23	...	10	...	19	...	166	...
	862. Carbuncle	...	...	...	...	...	...	...	...	...	...	1	...	1	...
	865. Whitlow	...	...	...	...	3	...	11	...	3	...	...	...	17	...
	894. Scabies	10	...	5	...	3	...	...	...	4	...	...	...	22	...
	844. Impetigo	1	...	...	...	...	...	...	...	...	...	...	...	1	...
	846. Ecthyma	...	...	...	...	...	...	...	...	...	...	1	...	1	...
Conditions not necessarily connected with general or local disease	905. Debility	...	...	6	...	19	2	2	1	5	2	2	...	34	5
Poisons	937. Cannabis indica	1	...	...	...	...	...	...	...	...	...	...	...	1	...
	972. Poisonous fish	...	...	1	...	...	...	...	...	...	...	...	...	1	...
Injuries	992. Burns and scalds	1	...	4	...	2	...	1	...	2	...	...	...	10	...
	1000. Contusion of head	3	...	...	...	...	...	...	...	...	...	...	...	3	...
	1011. Contusion	3	...	...	...	...	...	...	...	..	...	...	...	3	...
	1021. ,,	3	...	...	...	...	...	...	...	...	...	1	...	4	...
	1036. Burns and scalds	1	...	...	...	...	...	...	...	...	...	...	...	1	...
	1059. Contusion	...	...	...	...	...	...	1	...	...	...	...	...	1	...
	1078. Wound (scrotum)	...	...	...	...	...	...	...	...	1	..	...	...	1	...
	1092. Contusion	15	...	18	...	3	...	16	...	4	...	7	...	63	...
	1093. Sprain	4	...	...	...	1	...	...	...	...	...	...	...	5	...
	1094. Fracture of forearm	1	...	...	...	...	...	1	...	8	...	...	...	10	...
	1101. ,, clavicle	...	...	1	...	1	...	...	...	...	...	...	...	2	...
	1104. ,, of forearm	...	..	...	...	...	...	...	...	...	...	2	...	2	...
	1105. Fracture of the phal. mid finger	...	...	...	...	...	...	...	...	1	...	1	...	2	.
	1110. Dislocation of shoulder	1	...	1	...	...	...	...	...	...	...	...	...	2	...
	1114. Compound dislocation of metacarpal bone	...	...	...	...	...	...	1	...	...	...	...	...	1	...
	1115. Contusion	85	...	17	...	47	...	55	...	24	...	54	...	282	...
	1116. Sprain	6	...	1	...	10	...	...	...	1	...	...	...	18	...
	1117. Contused wound	...	...	1	...	2	...	...	...	3	...	...	...	6	...
	1122. Fracture of the femur	...	...	...	...	1	...	...	...	...	...	...	...	1	...
	3. Punitus	5	...	...	...	...	...	...	...	...	...	...	...	5	...
	Total	502	2	820	3	646	15	685	7	385	16	503	12	3541	55

APPENDIX P.

SUMMARY of the Annual Return of Sick of Native Troops for the Year 1874.

	General Diseases.		Diseases of the Nervous System.	Diseases of the Eye, &c.	Diseases of the Circulatory System.	Diseases of the Respiratory System.	Diseases of the Digestive System.	Diseases of the Urinary System.	Diseases of the Urinary Organs.	Diseases of the Generative System.	Diseases of the Organs of Locomotion.	Diseases of the Cellular Tissue.	Diseases of the Cutaneous System.	Conditions not necessarily connected with General or Local Disease.	Poisons.	Injuries.	Punitus.	Grand Total.
	A.	B.																
Treated during the year 1874 ...	1,901	160	20	83	4	166	280	4	53	17	2	60	333	34	2	417	5	3,541
Died during the year 1874	15	3	1	1	...	22	7	1	...	...	...	...	...	5	...	...	...	55

APPENDIX C.

ANNUAL RETURN showing the Number of Sick and Percentage for the Year 1874.

Regiment.	Strength.	Remained.	Admitted.	Total.	Discharged.	Died.	Remaining	Total.	Pereentage.		
									Treated to Strength.	Deaths to Strength.	Deaths to Treated.
27th or 1st Belooch Regiment, Hyderabad ...	652	12	490	502	468	2	32	502	76·9	0·3	0·3
29th or 2nd ,, Kurrachee ...	636	21	799	820	790	3	27	820	128·9	0·4	0·3
30th Regiment, or Jacob's Rifles, Jacobabad ...	592	19	627	646	601	15	30	646	109·1	2·5	2·3
1st Regiment Sind Horse do. ...	343	14	671	685	666	7	12	685	199·7	2·0	1·0
2nd do. do. do. ...	334	10	375	385	360	16	9	385	115·2	4·7	4.1
3rd do. do. do. ...	291	6	497	503	470	12	21	503	172·8	4·2	2·3
Total...	2,848	82	3,459	3,541	3,355	55	131	3,541	124·3	1·9	1·5

APPENDIX D.

STATEMENT showing the Sickness and Mortality in Native Troops serving in the Sind District during the Year 1874.

Regiment.		Station.	Moment in the Year.	Average Daily Sick.	Average Daily Strength present during the Year.	Remained on 1st January.	Admitted during the Year.	Total treated.	Discharged cured during the Year.	Discharged otherwise.	Died in Hospital.	Died out of Hospital.	Remaining.	Average Daily Sick per Cent. to Average Strength.	Ratio per Cent. of Admission to Average Strength.	Ratio per Cent. of Death. In Hospital. To Treated.	Ratio per Cent. of Death. In Hospital. To Average Strength.	Ratio per Cent. of Death. Out of Hospital. To Treated.	Ratio per Cent. of Death. Out of Hospital. To Average Strength.	Invalided. For Discharge the Service.	Invalided. For Change of Climate.	Hindus. Strength.	Hindus. Died per Cent. to Strength in and out of Hospital and on Leave.	Mussulmans. Strength.	Mussulmans. Died per Cent. to Strength in and out of Hospital and on Leave.	Strength present on the 31st December 1874.	Regiment.
27th Regiment N. I.	1874...	Hyderabad	Kurrachee.	11·9	652	12	490	502	462	6	2	...	32	1·8	75·1	0·4	0·3	...	...	7	3	136	...	577	0·3	713	27th Regiment N. I.
	1873...	Kurrachee.	Hyderabad None ...	13·7	657	13	655	668	645	2	9	2	12	1·9	99·6	1·3	1·6	0·3	0·3	31	7	122	0·8	559	1·8	672	
29th Regiment N. I.	1874...	Kurrachee.	Hyderabad Kurrachee.	21·5	636	21	799	820	784	6	3	4	27	3·4	125·6	0·3	0·4	0·4	0·6	24	6	99	...	554	1·3	653	29th Regiment N. I.
	1873...	Hyderabad	None ...	19·6	693	39	665	704	668	8	7	...	21	2·9	95·9	0·9	1·0	...	...	12	8	90	...	548	1·3	638	
30th Regiment N. I.	1874...	Jacobabad.	,,	20·0	592	19	627	646	580	21	15	5	30	3·3	105·9	2·5	2·5	0·8	0·8	49	5	265	1·7	360	2·0	625	30th Regiment N. I.
	1873...	,,	,,	16·0	595	50	624	674	628	16	11	6	19	2·6	104·3	1·6	1·8	0·8	1·0	31	10	232	4·3	390	1·5	622	
1st Regt. Sind Horse	1874...	,,	,,	13·3	343	14	671	685	646	20	7	4	12	3·8	195·6	1·0	2·0	0·5	1·1	20	20	38	5·2	455	1·9	493	1st Regiment Sind Horse.
	1873...	,,	,,	14·5	355	33	570	603	559	24	6	6	14	3·9	160·5	0·9	1·6	0·9	1·6	18	24	42	...	451	3·3	493	
2nd Regt. Sind Horse	1874..	,,	,,	8·8	334	10	375	385	345	15	16	5	9	2·6	112·2	4·1	4·7	1·2	1·4	22	15	65	3·8	418	7·6	483	2nd Regiment Sind Horse.
	1873...	,,	,,	14·8	342	52	390	442	410	11	11	2	10	4·3	114·0	2·4	3·2	0·4	0·6	12	11	95	2·1	386	2·8	481	
3rd Regt. Sind Horse	1874...	,,	,,	9·4	291	6	497	503	466	4	12	4	21	3·2	170·7	2·4	4·1	0·8	1·4	25	3	71	0·2	417	3·0	492	3rd Regim Sind Horse.
	1873...	,,	,,	14·1	360	26	786	812	787	13	6	2	6	3·9	218·3	0·7	1·6	0·2	0·5	23	13	63	...	429	1·8	492	
Total ...	1874...	...	...	84·9	2,848	82	3,459	3,541	3,283	72	55	22	131	3·0	121·4	1·5	1·9	0·6	0·7	147	52	674	2·5	2,781	2·1	3,459	
	1873...	...	...	92·7	3,002	213	3,690	3,903	3,697	74	50	18	82	3·2	122·5	1·2	1·6	0·4	0·5	127	73	644	2·0	2,754	1·9	3,398	

APPENDIX D—*continued.*

Regiment.		Average Number of consecutive Nights in bed.	Average Daily Number of Strength absent during the Year.	Number of Recruits joined during the Year.	Castes.																							
					Christians.									Hindus.			Mussulmans.			Pasis.			Jews.			Other Castes.		
					Europeans.			Eurasians.			Natives.																	
					Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.
27th Regiment N. I.	1874	22 3/12	55	75	6	...	...	...	...	...	...	...	...	120	...	...	529	2	...	...	..	...	3	...	...	...	...	...
	1873	20 5/12	65	71	6	...	..	...	...	...	...	...	...	108	1	...	546	8	2	...	...	...	3	...	...	...	...	...
29th Regiment N. I.	1874	7	89	23	5	...	..	...	...	...	...	...	...	92	...	...	538	3	3	...	...	...	3	...	1	3	...	...
	1873	4½	52	46	6	...	..	..	...	.	...	...	...	93	...	...	594	7	...	...	...	...	3	...	...	3	...	...
30th Regiment N. I.	1874	4¾	87	52	5	...	...	...	...	...	...	...	...	257	7	2	335	8	3	...	...	...	...	...	...	...	...	...
	1873	4	67	63	7	...	.	...	...		1	1	...	250	6	4	345	4	2	...	...	...	...	...	...	...	...	...
1st Regiment Sind Horse	1874	5	148	37	5	...	...	...	..	...	...	...	...	28	1	1	315	6	3	...	...	...	...	...	...	...	...	...
	1873	6	129	31	6	...		...	...	...	...	...	...	33	...	...	322	6	6	...	...	...	...	...	...	...	...	...
2nd Regiment Sind Horse	1874	5	142	56	4	...	...	...	...	...	...	...	...	45	4	1	289	12	4	...	...	...	...	...	...	...	...	...
	1873	5	136	36	3	...	...	...	...	...	...	...	...	54	3	...	288	8	2	...	...	...	...	...	...	...	...	...
3rd Regiment Sind Horse	1874	8	189	39	6	...	...	...	...	...	2	...	...	37	1	...	252	14	4	...	...	...	...	...	...	...	...	...
	1873	5	133	46	5	...	1	...	...	...	1	...	...	44	...	...	315	6	2	...	...	...	...	...	...	...	...	...
Total	1874	52½	710	282	31	...	...	...	...	...	2	...	..	579	13	4	2,258	42	17	...	...	...	6	...	1	3	...	...
	1873	45	582	293	33	...	1	...	...	...	2	1	...	582	10	4	2,410	39	14	...	...	...	6	...	...	3	...	..

STATEMENT.

STATEMENT showing the SICKNESS and MORTALITY among the NATIVE

N.B.—The regiments are placed

Regiment.	Station.	Movements in the year.	Average Daily Sick.	Average Daily Strength present during the Year.	Remained on 1st January 1874.	Admitted during the Year.	Total treated.	Discharged cured during the year.	Discharged otherwise.	Died in Hospital.	Died out of Hospital.	Remaining.	Average Daily Sick per Cent. to Average Strength.	Ratio per Cent. of Admissions to Average Strength.	Ratio per Cent of Death. In Hospital. To Treated.	Ratio per Cent of Death. In Hospital. To Average Strength.	Ratio per Cent of Death. Out of Hospital. To Treated.	Ratio per Cent of Death. Out of Hospital. To Average Strength.	Invalided. For Discharge the Service.	Invalided. For Change of Climate.
PRESIDENCY DIVISION,																				
20th Regiment N. I.. ..	Bombay and Janjira.	None.	30·8	645	13	656	669	609	22	7	..	31	4·6	101·7	1·0	1·1	..		26	6
21st do.	Bombay	None.	21·0	564	21	373	394	321	56	7	4	10	3·7	66·1	1·8	1·2	1·0	0·7	51	38
Details attached to 21st Regiment N.I.	Do.	None.	5·0	31	3	31	34	19	13	2	..	..	16·1	100·0	5·8	6·4	..	..	12	..
Dett., 4th Regiment N.I. ..	Do.	None.	5·3	149	..	120	120	111	4	1	..	4	3·3	80·5	0·8	0·6	..	..	4	..
Right Wing 7th do. ..	Tanna	None.	7·7	319	25	293	318	310	5	2	2	1	2·5	91·8	0·6	0·7	0·6	0·7	18	5
26th Regiment N.I... ..	Surat	None.	31·3	649	20	1,267	1,287	1,230	27	6	4	24	4·8	195·2	0·4	0·9	0·4	0·9	30	13
Detachment, 21st Regt. N.I.	On board the Str. "Dalhousie."	None.	0·2	8	..	22	22	18	4	..	..	..	3·0	275·0	..	..	..	..	..	..
Do. do. ..	Bassadore	None.	1·5	12	3	135	138	136	2	..	..	..	12·5	11,25·0	..	..	..	..	..	2
Do. do. ..	Do. Bushire ..	None.	1·3	16	..	47	47	47	..	..	..	..	8·5	293·7	..	..	..	..	..	..
Do. do. ..	On board the Schooner "Constance."	None.	0·3	7	1	15	16	15	..	1	..	..	5·2	214·2	6·2	14·2	..	..	..	1
		Total ..	104·4	2,400	86	2,959	3,045	2,816	133	26	10	70	4·3	123·2	0·8	1·0	0·3	0·4	141	65
2nd Gr. Regiment N. I. ..	Aden and Perim	The detachment at Perim is replaced every second month from its head-quarters.	18·3	687	62	459	521	485	20	6	3	10	2·6	6·68	1·1	0·8	0·5	0·4	59	9
2nd Company, Native Artillery.	Str. Point, Aden .	None.	1·4	75	..	59	59	58	..	..	..	1	1·8	78·6	..	..	..	..	3	1
5th Company, Sappers and Miners.	Aden	None.	2·4	94	24	77	101	98	3	..	..	..	2·5	81·9	..	..	..	..	..	2
Aden Troop	Khor Mucksa ..	Once been in the interior on patrolling duty.	6·9	87	12	307	319	315	..	..	..	4	7·9	352·8	..	..	..	..	8	1
		Total ..	29·0	943	98	902	1,000	956	23	6	3	15	3·0	95·5	0·6	0·6	0·3	0·3	70	13
		Grand Total ..	133·4	3,343	184	3,861	4,045	3,772	156	32	13	85	3·9	115·4	0·7	0·9	0·3	0·4	211	78
POONA																				
1st Gr. Regiment N. I ..	Poona	None.	21·6	661	38	605	643	604	16	4	..	19	3·2	91·5	0·6	0·6	..	..	14	6
3th Regiment N. I. ..	Do.	Strength of 338 was stationed in Bombay, from February to April, on account of riot.	19·2	665	27	619	646	593	22	2	1	29	2·8	93·0	0·3	0·2	0·1	0·1	20	19
17th do.	Do.	None.	18·7	579	36	506	542	503	15	5	3	19	3·2	87·3	0·9	0·8	0·5	0·5	21	15
1st Regiment N. L. C. ..	Do.	A squadron stationed in Bombay on account of riot.	19·2	420	28	408	436	407	16	3	2	10	4·5	96·6	0·6	0·7	0·4	0·4	12	11
Sappers and Miners.. ..	Kirkee	None.	7·9	397	6	344	350	334	8	1	1	7	1·9	86·6	0·3	0·3	0·3	0·3	5	7
Detachment, Poona Horse.	Dhulia	None.	1·8	148	1	36	37	32	2	1	..	2	1·2	24·3	2·7	0·7	.	..	1	2
Head-quarters, 4th Regiment N. I.	Satara	None.	9·1	350	13	362	375	364	5	1	..	5	2·6	103·4	0·2	0·2	..	..	17	4
19th Regiment N. I.. ..	Sholapur ..	None.	27·0	652	25	950	975	916	34	4	1	21	4·2	145·7	0·4	0·6	0·1	0·1	13	15
13th do.	Ahmednagar ..	None.	15·7	613	12	527	539	524	4	..	..	11	2·4	85·9	..	..	..	..	13	4
5th do.	Belgaum	None.	13·7	575	15	409	424	396	13	2	1	13	2·3	71·1	0·4	0·3	0·2	0·1	15	6
6th do.	Do.	None.	7·5	631	5	236	241	232	1	3	1	5	1·1	37·4	1·2	0·4	0·4	0·1	56	1
Poona Horse..	Sirur	None.	7·5	295	9	177	186	167	11	..	..	8	2·3	60·0	..	..	..	..	9	7
12th Regiment	Dharwar	None.	30·8	678	14	616	630	610	4	4	..	12	4·4	90·8	0·6	0·5	..	..	4	..
Detachment, 4th Regiment N. I.	Asirgarh ..	None.	7·5	147	8	260	268	255	10	1	..	2	4·0	176 8	0·3	0·6	..	..	8	..
14th Regiment N. I.. ..	Kolhápur ..	A detachment of 88 in strength was stationed at Kaládgi from October to December.	20·3	683	14	458	472	424	34	4	1	10	2·9	67·0	0·8	0·7	0·1	0·2	11	12
15th do.	Malligaum ..	None.	13·2	614	13	334	347	329	4	1	..	13	2·1	54·3	0·2	0·1	..	..	4	3
Detachment, 5th Regt. N. I.	Kaládgi	Arrived from Belgaum in April and rejoined its head-quarters in October.	0·5	89	1	8	9	9	..	..	..	..	0·6	8·9	..	..	..	..	..	..
		Total ..	241·2	8,197	265	6,855	7,120	6,699	199	36	11	186	2·9	83·6	0·5	0·4	0·1	0·1	223	112

OOPS serving in the BOMBAY PRESIDENCY during the Year 1874.

tood on the 1st July 1874.

Hindus.		Mussulmans.		Strength present on the 31st December.	Regiment.	Average Number of Consecutive Nights in Bed.	Average Daily Number of Strength absent during the Year.	Castes.																										No. of Recruits joined during the Year.	Remarks
								Christians.										Hindus.			Mussulmans.			Parsis.			Jews.			Other Castes.				
								Europeans.			Eurasians.			Natives.																				
	Died per Cent. to Strength in and out of Hospital and on Leave.	Average Daily Strength.	Died per Cent. to Strength in and out of Hospital and on Leave.					Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the Year.	Died in Hospital.	Died out of Hospital.		
N, AND BOMBAY MARINE.																																	
62	1·2	78	..	646	20th Regiment N. I.. ..	$2\frac{22}{74}$	83	6	1	..	..	..	..	5	..	..	562	7	..	78	..	..	..	..	..	...	..	..	..	..	..	..	..	30	
08	2·2	151	0·6	565	21st do. ..	$3\frac{7}{6}$	105	5	..	..	..	..	..	1	..	..	408	5	4	151	1	..	..	..	..	4	1	..	..	..	..	..	..	24	
26	7·6	5	..	100	Details, 21st Regt. N. I.,..	..	..	..	..	..	..	..	..	..	..	..	26	2	.	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
33	0·7	16	..	155	Dett., 4th do. ..	$5\frac{4}{12}$	3	1	..	..	..	..	..	..	..	..	133	1	..	16	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
94	1·4	18	..	319	Do. 7th do. ..	$3\frac{20}{24}$	23	2	..	..	..	..	..	3	..	..	294	2	2	18	..	..	..	..	..	4	..	..	..	..	..	..	..	..	
51	1·8	78	..	633	26th Regiment N. I. ..	5	67	5	..	2	..	..	..	16	..	..	551	6	4	78	..	..	..	..	..	4	..	..	..	..	..	..	..	45	
8	..	..	..	8	Dett. 21st Regt. N. I. ..	..	..	..	..	..	..	..	..	..	..	..	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
8	..	3	..	12	Do. do. ..	..	..	..	..	..	..	..	..	..	..	..	8	..	..	3	..	..	..	..	..	1	..	..	..	..	..	..	..	..	
11	..	5	..	16	Do. do. ..	$\frac{3}{4}$	..	..	..	..	..	..	..	..	..	..	11	..	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
7	14·2	..	..	7	Do. do. ..	..	..	..	..	..	..	..	..	..	..	..	7	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
08	1·6	354	0·3	2,461		..	281	19	1	2	..	..	..	25	..	..	2,008	24	10	354	1	..	..	..	..	13	1	..	...	..	..	..	..	99	
76	1·3	84	1·1	686	2nd Gr. Regiment N. I..	$9\frac{1}{3}$	60	6	..	..	..	..	..	8	..	..	576	5	3	84	1	..	..	..	..	19	..	..	..	..	..	..	..	5	
56	..	19	..	75	2nd Company, Native Artillery.	5	1	..	..	..	..	..	..	..	..	..	56	..	..	19	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
33	..	8	..	94	5th Company, Sappers and Miners.	4	1	1	..	..	..	..	..	..	..	..	83	..	..	8	..	..	..	..	..	3	..	..	..	..	..	..	..	..	
24	..	63	..	86	Aden Troop	4	..	1	..	..	..	..	..	..	..	..	24	..	..	63	..	..	..	..	..	..	..	..	..	..	..	..	..	8	
39	1·0	174	0·5	941		..	62	8	..	.	..	..	..	8	..		739	5	3	174	1	.	..	..	..	22	..	..	..	..	..	..	..	13	
47	1·5	528	0·3	3,402		..	343	27	1	2	..	..	..	33	..	..	2,747	29	13	528	2	..	..	..	..	35	1	..	..	..	..	..	..	112	
SION.																																	
37	0·7	72	..	676	1st Gr. Regiment N. I..	$3\frac{1}{2}$	65	6	..	..	..	..	..	20	..	..	567	4	..	72	..	..	..	..	..	2	..	.	..	..	..	..	..	20	
44	0·5	80	..	619	8th Regiment N. I. ..	3	28	5	..	..	..	..	..	12	..	..	544	2	1	80	..	..	.	..	..	29	..	..	..	..	..	..	..	37	
38	1·4	32	..	693	17th do.	$3\frac{3}{4}$	117	7	..	..	..	..	..	6	..	..	538	5	3	32	..	..	..	..	..	3	..	..	..	..	..	..	..	38	
59	0·3	154	2·5	476	1st Regiment N. L. C. ..	6	54	..	..	..	2	..	..	7	..	..	259	..	1	154	3	1	..	..	..	..	..	..	..	..	..	..	..	23	
33	0·6	63	..	397	Sappers and Miners ..	3	37	9	..	..	..	..	..	1	..	..	333	1	1	63	..	..	..	..	..	..	..	..	..	..	..	..	..	15	
26	..	122	0·8	146	Detachment, Poona Horse	7	..	1	..	..	..	..	..	..	..	..	26	..	..	122	1	..	..	..	..	..	..	..	..	..	..	..	..	1	
96	0·4	40	..	336	Head-quarters, 4th Regt. N. I.	$8\frac{1}{2}$	43	5	..	..	..	..	..	10	..	..	296	1	..	40	..	..	..	..	..	4	..	..	..	..	..	..	..	23	
07	0·9	88	..	675	19th Regiment N. I. ..	$5\frac{1}{2}$	43	7	..	..	..	..	..	5	..	..	507	4	1	88	..	..	..	..	..	14	..	..	38	..	..	56	
76	..	71	..	652	13th do. ..	$4\frac{1}{4}$	66	6	..	..	1	..	..	10	..	..	376	..	..	71	..	..	..	..	..	..	..	..	156	..	..	23	
97	0·6	58	..	672	5th do. ..	$4\frac{2}{3}$	79	7	..	..	..	..	..	7	..	..	497	2	1	58	..	..	..	..	..	13	..	..	..	..	..	22	
29	0·7	90	..	687	6th do. ..	$6\frac{1}{2}$	60	7	..	..	..	..	..	5	..	..	529	3	1	90	..	..	..	..	..	7	..	..	..	..	..	70	
59	..	236	..	318	Poona Horse	12	36	5	..	..	..	..	..	...	..	..	59	..	..	236	..	..	..	..	..	..	..	..	..	..	..	..	..	32	
95	0·4	112	1·7	687	12th Regiment N. I. ..	10	39	7	..	..	..	..	..	14	..	..	495	2	..	112	2	..	..	..	..	27	..	..	30	..	..	28	
83	..	9	11·1	149	Detachment, 4th Regt. N. I.	8	11	..	..	..	..	..	..	..	..	..	88	..	..	9	1	..	..	..	..	5	..	..	45	..	..	..		
14	0·9	87	..	664	14th Regiment N. I. ..	13	106	6	..	..	..	..	..	70	..	..	514	4	1	87	..	..	..	..	..	12	..	..	..	..	..	..	..	42	
30	..	64	1·5	602	15th do. ..	$10\frac{3}{12}$	41	7	..	..	..	..	..	14	..	..	530	..	..	64	1	..	..	..	..	6	..	..	..	..	..	19	
76	..	13	..	..	Detachment, 5th Regt. N. I.	$2\frac{1}{2}$	..	..	..	..	..	..	..	...	..	..	76	..	..	13	..	..	..	..	..	..	..	..	..	..	..	..	..		
34	0·6	1,391	0·6	8,449		..	822	85	..	..	3	..	..	181	..	..	6,234	28	10	1,391	8	1	..	..	..	122	..	..	369	..	..	449		

STATEMENT showing the SICKNESS and MORTALITY among the NATIVE

Regiment.	Station.	Movements in the year.	Average Daily Sick.	Average Daily Strength present during the Year.	Remained on 1st January 1874.	Admitted during the Year.	Total treated.	Discharged cured during the year.	Discharged otherwise.	Died in Hospital.	Died out of Hospital.	Remaining.	Average Daily Sick per Cent. to Average Strength.	Ratio per Cent. of Admissions to Average Strength.	Ratio per Cent of Death. In Hospital. To Treated.	Ratio per Cent of Death. In Hospital. To Average Strength.	Ratio per Cent of Death. Out of Hospital. To Treated.	Ratio per Cent of Death. Out of Hospital. To Average Strength.	Invalided. For Discharge the Service.	Invalided. For Change of Climate.
																				NORTHERN
3rd Regiment N. I.	Ahmedabad ..	None.	16·0	642	25	893	918	849	47	2	..	20	4·0	139·0	0·2	0·3	..	..	48	12
9th do.	Do. ..	None.	15·5	637	7	396	403	377	9	2	..	15	2·4	63·1	0·4	0·3	..	..	12	8
Detachment, 3rd Regt. N. I.	Sádra ..	The detachments were replaced every month by others from their head-quarters.	0·4	25	1	27	28	28	..	..	..	..	1·6	108·0	..	..	..	..	..	..
Do. 9th do. ..	Do. ..		0·5	50	..	21	21	21	..	..	..	..	1·0	42·0	..	..	..	..	..	..
28th Regiment N. I.. ..	Rájkot ..	None.	15·2	475	18	623	641	610	22	3	..	6	3·2	131·1	0·4	0·6	..	..	11	6
1st Company, Native Artillery.	Do.	None.	3·4	133	..	158	158	153	4	..	..	1	2·5	118 7	..	..	..	..	12	..
Squadron, 2nd Regiment L. C.	Do.	Joined its head-quarters on the 27th November 1874.	3·5	136	4	116	120	111	4	..	..	5	2·6	85·2	..	..	..	..	3	1
Head-quarters, 7th Regiment N. I.	Do.	None.	10·0	324	14	407	421	399	13	2	..	7	3·0	125·6	0·4	0·6	..	..	19	4
11th Regiment N. I.. ..	Bhuj	None.	14·0	668	9	368	377	349	5	5	2	18	2·1	55·1	1·3	0·7	0·5	0·2	14	..
2nd Regiment L. C... ..	Deesa	None.	10·9	257	6	282	288	270	5	4	..	9	4·2	109·7	1·3	1·5	..	..	13	3
18th Regiment N. I.. ..	Do.	None.	28·0	620	23	1,028	1,051	993	31	4	11	23	4·5	165·8	0·3	0·6	1·0	1·7	30	19
25th do.	Mhow	The regiment and its detachment stationed at Mehidpur and Augur, arrived in March.	33·2	528	52	1,029	1,081	1,038	29	4	1	10	6·2	194·6	0·3	0·7	..	0·1	83	29
16th do.	Do.	None.	38·2	528	16	1,010	1,026	975	17	2	2	32	7·2	191·2	0·1	0·3	0·1	0·3	60	13
3rd Regiment N. L. C. ..	Nimach ..	None.	15·6	302	9	502	511	479	11	3	..	18	5·2	166·2	0·6	0·9	..	..	8	..
24th Regiment N. I... ..	Do.	None.	41·0	646	18	1,346	1,364	1,329	9	6	2	20	6·3	208·3	0·4	0·9	0·1	0·3	50	9
23rd do.	Nasirábad ..	None.	25·4	687	16	897	913	863	33	7	4	10	3·7	130·5	0·7	1·0	0·4	0·5	49	13
Squadron, 3rd Regiment N. L. C.	Do. ..	None.	1·7	127	4	162	166	155	2	.	..	9	1·4	127·5	..	..	..	..	4	2
Wing, 10th Regiment N. I..	Augur	Arrived from Mhow in March.	13·2	206	..	334	334	308	16	..	..	10	6·3	162·1	..	..		..	26	15
22nd Regiment N. I.. ..	Baroda	None.	32·7	623	24	1,130	1,154	1,099	23	5	3	27	5·2	181·2	0·4	0·8	0·2	0·4	20	11
Detachment, 7th Regt. N. I.	Dwárka ..	None.	0·4	7	2	19	21	21	..	..	..	..	5·7	271·4	..	..	..	..	..	..
Do. 28th do. ..	Do. ..	None.	4·3	79	..	136	136	122	4	..	..	10	5·4	172·0	..	..	..	..	..	3
Head-quarters, 10th Regiment N. I.	Mehidpur ..	The detachment at Indore rejoined in February and the head-quarters arrived in March from Mhow.	29·4	389	22	997	1,019	927	75	..	1	17	7·4	256·3	..	..	..	0·2	47	17
Detachment, 28th Regiment N. I.	Barda Chowki	None.	10·0	79	..	355	355	344	2	2	..	7	12·6	449·3	0·5	2·5	..	..	..	2
Detachments, 16th and 25th Regiments N. I.	Indore	The detachment 25th relieved the 16th on the 1st August.	3·7	194	..	190	190	181	1	2	..	6	2·0	97·9	1·0	1·0	..	..	..	..
		Total ..	376·2	8,362	270	12,426	12,696	12,001	362	53	26	280	4·5	148·6	0·4	0·6	0·2	0·4	509	167
																				SIND
27th Regiment N. I... ..	Kurrachee ..	None.	11·9	652	12	490	502	462	6	2	..	32	1·8	75·1	0·4	0·3	..	..	7	3
29th do.	Hyderabad ..	None.	21·5	636	21	799	820	784	6	3	4	27	3·4	125·6	0·3	0·4	0·4	0·6	24	6
30th do.	Jacobabad ..	None.	20·0	592	19	627	646	580	21	15	5	30	3·3	105·9	2·4	2·5	0·8	0·8	49	5
1st Sind Horse	Do. ..	None.	13·3	343	14	671	685	646	20	7	4	12	3·8	195·3	1·0	2·0	0·5	1·1	20	20
2nd do.	Do. ..	None.	8·8	334	10	375	385	345	15	16	5	9	2·6	112·2	4·2	4·8	1·2	1·4	22	15
3rd do.	Do. ..	None.	9·4	291	6	497	503	466	4	12	4	21	3·2	170·7	2·4	4·1	0·8	1·4	25	3
		Total ..	84·9	2,848	82	3,459	3,541	3,283	72	55	22	131	2·9	121·4	1·5	1·9	0·6	0·7	147	52
		Grand Total ..	835·7	22,750	801	26,601	27,402	25,755	789	176	73	682	3·67	116·92	0·64	0·77	0·26	0·31	1090	409

TROOPS *serving in the* BOMBAY PRESIDENCY *during the Year* 1874—continued.

Hindus.		Mussulmans.		Strength present on 31st December.	Regiment.	Average Number of Consecutive Nights in Bed.	Average Daily Number of Strength absent during the year.	Castes.																						Number of Recruits joined during the year.	Remarks.
								Christians.									Hindus.			Mussulmans.			Parsis.			Jews.			Other Castes.				
								Europeans.			Eurasians.			Natives.																		
Died per Cent. to Strength in and out of Hospital and on Leave.	Average Daily Strength.	Died per Cent. to Strength in and out of Hospital and on Leave.					Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.	Average Daily Strength present during the year.	Died in Hospital.	Died out of Hospital.		
BOMBAY.																															
0·3	111	..		642	3rd Regiment N. I. ..	5 3/4	54	5	.. ..	..	.. ..	..	2	.. ..	507	2	..	111	.. ..	..	.. ..	22	.. ..	..	.. ..	45	
0·3	71	..		618	9th do. ..	5 1/4	82	7	.. ..	..	.. ..	..	10	.. ..	556	2	..	71	.. ..	..	.. ..	..	.. ..	..	.. ..	48	
..	3	..		..	Dett., 3rd Regt. N. I. ..	4	..	..	.. ..	..	.. ..	..	..	.. ..	21	..	..	3	.. ..	..	.. ..	1	.. ..	..	.. ..	..	
..	5	..		40	Do. 9th do. ..	3	4	..	.. ..	..	.. ..	..	1	.. ..	44	..	..	5	.. ..	..	.. ..	..	.. ..	..	.. ..	..	
0·7	59	..		492	28th Regiment N. I. ..	7	226	5	.. ..	..	.. ..	..	10	.. ..	397	3	..	59	.. ..	..	.. ..	9	.. ..	..	.. ..	23	
..	20	..		126	1st Company, Native Artillery. ..	12 3/4	7	2	..	..	.. ..	..	1	.. ..	111	..	..	20	.. ..	..	.. ..	..	.. ..	1	.. ..	1	
..	54	..		..	Squadron, 2nd Regt. L. C.	5	32	1	.. ..	..	.. ..	..	3	.. ..	79	..	..	54	.. ..	..	.. ..	..	.. ..	..	.. ..	..	
0·7	48	..		287	Head-quarters, 7th Regiment N. I.	7	76	5	.. ..	..	.. ..	..	9	.. ..	265	2	..	48	.. ..	..	.. ..	2	.. ..	..	.. ..	24	
0·8	74	2·7		694	11th Regiment N. I. ..	7·	50	5	.. ..	..	.. ..	..	..	.. ..	590	4	1	74	1 1	..	.. ..	4	.. ..	..	.. ..	40	
1·4	116	1·8		296	2nd Regiment L. C. ..	5	51	5	.. ..	6	.. ..	..	..	.. ..	141	2	.	116	2 ..	..	.. ..	..	.. ..	..	.. ..	13	
2·4	78	2·5		656	18th Regiment N. I. ..	8	63	7	.. ..	4	.. ..	..	7	.. ..	531	2	11	78	2 ..	..	.. ..	..	.. .	1	.. ..	47	
0·9	65	1·5		379	25th do. ..	10 1/3	68	6	.. ..	..	.. ..	..	3	.. ..	454	3	1	65	1 ..	..	.. ..	6	.. ..	..	.. ..	49	
0·8	48	..		686	16th do. ..	9 1/3	33	5	.. ..	..	.. ..	..	12	.. ..	456	2	2	48	.. ..	..	.. ..	12	.. ..	..	.. ..	58	
0·9	91	1·0		350	3rd Regiment N. L. C. ..	3 5/6	184	5	.. ..	..	.. ..	..	3	. ..	208	2	..	91	1 ..	..	.. ..	..	.. ..	..	.. ..	13	
1·3	87	1·1		625	24th Regiment N. I. ..	5 5/6	49	6	.. ..	..	.. ..	..	20	.. ..	523	5	2	87	1 ..	..	.. ..	16	.. ..	..	.. ..	42	
1·4	120	2·5		687	23rd do. ..	9 5/6	24	8	.. ..	..	.. ..	..	26	.. ..	534	5	3	120	2 1	..	.. ..	7	.. ..	..	.. ..	26	
..	64	1·5		133	Squadron, 3rd Regiment N. L. C.	6	7	1	.. ..	..	.. ..	..	1	.. ..	62	..	..	64	.. ..	..	.. ..	..	.. ..	..	.. ..	..	
..	21	..		247	Wing, 10th Regt. N. I. ..	3 2/3	112	2	.. ..	..	.. ..	..	1	.. ..	165	..	..	21	.. ..	..	.. ..	2	.. ..	17	.. ..	..	
1·3	81	1·2		630	22nd Regiment N. I. ..	3	88	6	.. ..	..	.. ..	..	13	.. ..	525	5	2	81	.. 1	..	.. ..	4	.. ..	..	.. ..	36	
..	1	..		7	Dett., 7th Regt. N. I. ..	2	..	..	.. ..	..	.. ..	..	..	.. ..	6	..	..	1	.. ..	..	.. ..	..	.. ..	..	.. ..	..	
..	5	..		79	Do. 28th do. ..	2	4	1	.. ..	..	.. ..	..	..	.. ..	74	..	..	5	.. ..	..	.. ..	..	.. ..	..	.. ..	..	
0·3	75	..		305	Head-quarters, 10th Regiment N. I.	8	46	5	.. ..	..	.. ..	..	4	.. ..	305	..	1	75	.. ..	..	.. ..	5	.. ..	..	.. ..	73	
2·3	10	..		86	Dett., 28th Regt. N. I. ..	5	4	..	.. ..	..	.. ..	..	1	.. ..	68	2	..	10	.. ..	..	.. ..	..	.. ..	..	.. ..	..	
1·2	22	..		221	Do. 25th do. ..	10	..	1	.. ..	..	.. ..	..	2	.. ..	168	2	..	22	.. ..	..	.. ..	2	.. ..	..	.. ..	..	
0·8	1,329	0·9		8,286		..	1,264	88	.. ..	10	.. ..	..	129	.. ..	6,790	43	23	1,329	10 3	..	.. ..	92	..	22	.. ..	538	
DECCAN.																															
..	529	0·5		713	27th Regiment, N. I. ..	22 5/7	55	6	.. ..	..	.. ..	..	..	.. ..	120	..	..	529	2 ..	..	.. ..	3	.. ..	..	.. ..	75	
..	538	1·1		653	29th do. ..	7	89	5	.. ..	..	.. ..	..	..	.. ..	92	..	..	538	3 3	..	.. ..	3	.. 1	3	.. ..	23	
3·8	335	3·2		625	30th do. ..	4 1/7	87	5	.. ..	..	.. ..	..	..	.. ..	257	7	2	335	8 3	..	.. ..	..	.. ..	..	.. ..	52	
7·2	315	2·8		493	1st Sind Horse	5	149	5	.. ..	..	.. ..	..	..	.. ..	28	1	1	315	6 3	..	.. ..	..	.. ..	..	.. ..	37	
11·1	289	5·5		483	2nd do.	5	142	4	.. ..	..	.. ..	..	..	.. ..	45	4	1	289	12 4	..	.. ..	..	.. ..	..	.. ..	56	
·7	252	5·9		492	3rd do.	8	189	6	.. ..	..	.. ..	..	2	.. ..	37	1	..	252	11 4	..	.. ..	..	.. ..	..	.. ..	39	
2·9	2,258	2·6		3,459		..	711	31	.. ..	..	.. ..	..	2	.. ..	579	13	4	2,258	42 17	..	.. ..	6	.. 1	3	.. ..	282	
0·39	5,596	1·13		23,596		..	3,140	231	1 2	13	.. ..	..	345	.. ..	16,350	113	50	5,506	62 21	..	.. ..	255	1 1	294	.. ..	1,381	

Summary of the Statistics for the Year 1874.

Years.	Average Daily Strength.	Admissions into Hospital.	Ratio per Cent. of Admissions to Average Strength; Mean of all.	Average Daily Sick per Cent. to Average Strength; Mean of all.	Deaths in Hospital.	Ratio of Deaths in Hospital per Cent. to Average Strength.	Ratio of Deaths in Hospital per Cent. to Admissions.	Deaths out of Hospital and on Leave.	Total Deaths out of the Average Strength in the Year.	Ratio per Cent. of Total Deaths to the Average Strength.	Ratio per Cent. to Strength of Hinduswho died in and out of Hospital and on Leave.	Ratio per Cent. to Strength of Mussulmans who died in and out of Hospital and on Leave.	Ratio per Cent. to Strength invalided for discharge the Service.	Ratio per Cent. to Strength invalided for change of Climate.
1874 ...	22,750	26,601	116·92	3·67	176	0·77	0·66	72	248	1·09	0·99	1·12	4·60	1·73
1873 ...	22,967	29,035	126·86	3·82	165	0·71	0·56	81	246	1·07	*	*	4·35	2·11
1872 ...	22,903	36,209	158·09	4·54	226	0·98	0·62	95	321	1·40			3·98	2·13
1871 ...	22,959	29,733	129·50	4·31	236	1·03	0·79	97	333	1·45			3·12	2·10
1870 ..	22,715	28,380	139·08	4·33	191	0·84	0·68	95	286	1·26			3·71	2·33

* Strength of Hindus and Mussulmans was not furnished for the last four years.

APPENDIX I.

ANNUAL GENERAL RETURN exhibiting the Sick of H. M.'s Native Troops in the Bombay Presidency for the Year 1874 *compared with* 1873, *arranged according to authorized Classification and Nomenclature.*

1874.

| Corps. | Station. | Strength. | Average Daily Sick. | Classes of Diseases. | | |

APPENDIX II.

RETURN showing the Admissions and Deaths, &c., amongst the Native Troops of the Bombay Presidency at the several Stations for the Year 1874 *compared with* 1873.

	1874.						1873.					
Divisions.	Regiment.	Station.	Average Strength.	Average Daily Sick.	Admissions.	Deaths in Hospital.	Regiment.	Station.	Average Strength.	Average Daily Sick.	Admissions.	Deaths in Hospital.
Presidency Division, Aden, and Bombay Marine.	20th Regiment N. I. ...	Bombay ...	628	30·5	637	7	19th Regiment N. I. ...	Bombay ...	650	31·4	952	4
	21st do. ...	Do. ...	564	21·0	373	7	21st do. ...	Do. ...	588	20·0	458	3
	Details attached to 21st Regiment N. I.	Do. ...	31	5·0	31	2	Details attached to 21st Regiment N. I.	Do. ...	43	3·0	44	5
	Detachment, 4th Regt. N.I.	Do. ...	149	5·3	120	1	Det., 11th Regiment N. I.	Do. ...	168	3·2	8[illegible]	1
	Right Wing, 7th Regt. N.I.	Tanna ...	319	7·7	293	2	Right Wing, 7th Regt. N. I.	Tanna ...	275	18·0	448	1
	26th Regiment N. I. ...	Surat ...	649	31·3	1,267	6	26th Regiment N. I. ...	Surat ...	653	27·3	1,214	7
	Detachment, 21st Regt. N.I.	On board the Steamer "Dalhousie" ...	8	0·2	22	...	Detachment, 21st Regt. N. I.	On board the steamer "Dalhousie." ...	8	0·1	16	...
	Do. do. ...	Bassadore ...	12	1·5	135	...	Do. do. ...	Bassadore ...	12	2·0	138	...
	Do. do. ...	Bushire, and on board the Schooner "Constance."	23	1·6	62	1	Do. do. ...	Bushire, and on board the Schooner "Constance."	23	2·0	112	...
	Do. 20th Regt N. I.	Janjira ...	17	0·3	19	...	Do. 19th Regt. N. I.	Janjira ...	17	1·4	14	...
	2nd. Gr. Regiment N. I. ...	Aden ...	636	18·2	440	6	2nd Gr. Regiment N. I. ...	Aden ...	598	21·2	621	4
	2nd Co., Native Artillery...	Steamer Point, Aden ...	75	1·4	59	...	1st Co., Native Artillery ...	Do. ...	86	2·6	65	1
	5th Co., Sappers and Miners.	Aden ...	94	2·4	77	...	5th Co., Sappers and Miners.	Do. ...	94	2·1	71	2
	Det., 2nd Gr. Regt. N. I....	Perim ...	51	0·1	19	...	Dett., 2nd Gr. Regt. N. I.	Perim ...	56	0·9	51	...
	Aden Troop	Khor Mucksa, Aden ...	87	6·9	307	...	Aden Troop	Khor Mucksa, Aden ...	87	5·0	226	...
		Total ...	3,343	133·4	3,861	32		Total ...	3,358	140·2	4,513	28

Division.	1874. Regiment.	Station.	Average Strength.	Average Daily Sick.	Admissions.	Deaths in Hospital	1873. Regiment.	Station.	Average Strength.	Average Daily Sick.	Admissions.	Deaths in Hospital.
Poona Division.	1st Gr. Regiment. N. I. ...	Poona ...	661	21·6	605	4	1st Gr. Regiment N.I. ...	Poona ...	698	19·1	655	4
	8th Regiment N. I. ...	Do. ...	665	19·2	619	2	8th Regiment N. I. ...	Do. ...	650	24·9	853	1
	17th do. ...	Do. ...	579	18·7	506	5	17th do.	Do. ...	480	19·9	486	1
	1st Regiment N. L. C. ...	Do. ...	420	19·2	408	3	1st Regiment N. L. C. ...	Do. ...	448	23·5	464	4
	Sappers and Miners ...	Kirkee ...	397	7·9	344	1	Sappers and Miners ...	Kirkee ...	391	10·9	525	...
	Detaehment, Poona Horse.	Dhulia ...	148	1·8	36	1	Detaehment, Poona Horse...	Dhulia ...	131	2·1	58	1
	Hd.-qrs., 4th Regt. N. I...	Satara ...	350	9·1	362	1	Hd.-qrs., 11th Regt. N. I...	Satara ...	392	12·2	342	2
	19th Regiment N. I. ...	Sholapur ...	652	27·0	950	4	28th Regiment N. I. ...	Sholapur ...	635	15·0	532	4
	13th do. ...	Ahmednagar ...	613	15·7	527	...	13th do. ...	Ahmednagar ...	622	17·0	488	1
	5th do. ...	Belgaum ...	575	13·7	409	2	5th do. ...	Belgaum ...	607	19·1	492	3
	6th do. ...	Do. ...	631	7·5	236	3	6th do. ...	Do. ...	617	12·6	281	5
	Poona Horse	Sirur ...	295	7·5	177	...	Poona Horse ...	Sirur ...	251	7·4	214	3
	12th Regiment N. I. ...	Dharwar ...	678	30·8	616	4	12th Regiment N. I, ...	Dharwar ...	646	15·0	545	1
	Dett., 5th Regiment N. I...	Kaládgi ...	89	0·5	8	...	Detachment, Poona Horse..	Kaládgi ...	80	3·6	87	...
	14th Regiment N. I ...	Kolhápur ...	683	20·3	458	4	14th Regiment N. I. ...	Kolhápur ...	583	22·6	546	1
	15th do. ...	Malligaum ...	614	13·2	334	1	15th do. ...	Malligaum ...	637	11·8	399	3
	Dett., 4th Regiment N. I...	Asirgarh ...	147	7·5	260	1	Dett., 11th Regiment N.I...	Asirgarh ...	131	5·8	98	1
							Left Wing, 17th Regt. N. I.	Dhulia ...	210	7·9	269	...
		Total...	8,197	241·2	6,855	36		Total...	8,209	250·4	7,334	35
Division.	3rd Regiment N. L. I. ...	Ahmedabad ...	642	26·0	893	2	3rd Regiment N. L. I. ...	Ahmedabad ...	642	21·6	957	8
	9th Regiment N. I. ...	Do. ...	637	15·5	396	2	9th Regiment N. I. ...	Do. ...	569	16·6	525	7
	Dett., 30th do. ...	Sádra ...	25	0·4	27	...	Dett., 3rd do. ...	Sádra ...	47	1·0	29	...
	Do. 9th do. ...	Do. ...	50	0·5	21	...	Do. 9th do. ...	Do. ...	41	0·6	15	...
	28th Regiment N. L. I	Rájkot ...	475	15·2	623	3	18th Regiment N. I. ...	Rájkot ...	625	16·1	885	4
	1st Co., Native Artillery ...	Do. ...	133	3·4	158	...	2nd Co., Native Artillery ...	Do. ...	128	2·2	126	1
	Squadron, 2nd Regt. L. C...	Do. ...	136	3·5	116	...	Squadron, 2nd Regt. L. C...	Do. ...	111	3·3	142	...
	Hd.-qrs., 7th Regt. N. I. ...	Do. ...	324	10·0	407	2	Hd.-qrs., 7th Regt. N. I. ...	Do. ...	193	9·1	300	2
	11th Regiment N. I. ...	Bhuj ...	668	14·0	368	5	20th Regiment N. I. ...	Bhuj ...	618	31·1	637	4
	2nd Regiment N. L. C. ..	Deesa ...	257	10·9	282	4	2nd Regiment N. L. C. ...	Deesa ...	293	7·5	313	2

Northern	18th Regiment N. I. ...	Do. ...	620	28·0	1,028	4	24th Regiment N. I. ...	Do. ...	617	28·0	1,034	7
	25th do. ...	Mhow ...	528	33·2	1,029	4	Hd.-qrs., 10th Regt. N. I...	Mhow ...	837	36·2	1,123	1
	16th do. ...	Do.	528	38·2	1,010	2	16th Regiment N. I. ...	Do. ...	480	23·2	812	...
	3rd Regiment N. L. C. ...	Nimach ...	302	15·6	502	3	3rd Regiment N. L. C. ...	Nimach ...	280	11·2	299	1
	24th Regiment N. I. ...	Do.	646	41·0	1,346	6	22nd Regiment N. I. ...	Do. ..	608	42·3	1,178	2
	23rd do. ...	Nasirábad ...	687	25·4	897	7	23rd do. ...	Nasirábad ...	616	29·0	1,201	4
	Squadron, 3rd Regt. N. L. C.	Do.	127	1·7	162	...	Squadron, 3rd Regt. N. L. C.	Do. ...	110	2·5	148	2
	Dett., 10th Regiment N. I...	Augur ...	206	13·2	334	...	Left Wing, 25th Regt. N. I.	Augur ...	268	16·4	427	1
	22nd Regiment N. I. ...	Baroda ...	623	32·7	1,130	5	4th Regiment N. I. ...	Baroda ...	620	20·1	947	1
	Dett., 7th Regiment N. I....	Dwárka ...	7	0·4	19	...	Dett., 7th do. ...	Dwárka ...	87	8·0	181	1
	Dett., 28th do. ...	Do.	79	4·3	136	...						
	Hd.-qrs., 10th Regt. N. I...	Mehidpur ...	389	29·4	997	...	Hd.-qrs., 25th Regt. N. I...	Mehidpur ...	337	44·2	1,435	2
	Dett., 28th Regiment N. I..	Barda Chowki .	79	10·0	355	2	Dett., 7th Regiment N. I. ...	Barda Chowki .	89	12·5	360	2
	Dett., 16th and 25th Regiments N. I.	Indore ...	194	3·7	190	2	Dett., 10th and 16th Regiments N. I.	Indore ...	234	10·2	424	...
		Total...	8,362	376·2	12,426	53		Total ...	8,450	392·9	13,498	52
Sind District.	27th Regiment N. I. ...	Kurrachee ...	652	11·9	490	2	27th Regiment N. I. ...	Kurrachee ...	657	13·7	655	9
	29th do. ...	Hyderabad ...	636	21·5	799	3	29th do. ...	Hyderabad ...	641	19·6	665	7
	30th do. ...	Jacobabad ...	592	20·0	627	15	30th do. ...	Jacobabad ...	595	16·0	624	11
	1st Sind Horse ...	Do.	343	13·3	671	7	1st Sind Horse ...	Do. ...	355	14·5	570	6
	2nd do. ...	Do.	334	8·8	375	16	2nd do. ...	Do. ...	342	14·8	390	11
	3rd do. ...	Do.	291	9·4	497	12	3rd do. ...	Do. ...	360	14·1	786	6
		Total.....	2,848	84·9	3,459	55		Total	2,950	82·7	3,690	50
		Grand Total...	22,750	835·7	26,601	176		Grand Total...	22,967	876·2	29,035	165

APPENDIX III.

COMPARATIVE STATEMENT showing the Health of the Native Troops in the four Divisions of the Bombay Presidency.

	1874.								1873.							
	Strength.	Admissions.	Deaths.	Average Daily Sick.	Ratio per Cent of Admissions to Average Strength.	Ratio of Deaths per Cent. In Hospital. To Admissions.	Ratio of Deaths per Cent. In Hospital. To Strength.	Average Daily Sick per Cent. to Average Strength.	Strength.	Admissions.	Deaths.	Average Daily Sick.	Ratio per Cent of Admissions to Average Strength.	Ratio of Deaths per Cent. In Hospital. To Admissions.	Ratio of Deaths per Cent. In Hospital. To Strength.	Average Daily Sick per Cent. to Average Strength.
Presidency Division. Bombay Circle.	2,400	2,959	26	104·4	123·2	0·8	1·1	4·3	2,437	3,479	21	108·4	142·7	0·6	0·8	4·4
Presidency Division. Aden... ...	943	902	6	29·0	95·6	0·6	0·6	3·0	921	1,034	7	31·8	112·2	0·6	0·7	3·3
Poona Division	8,197	6,855	36	241·2	83·6	0·5	0·4	2·9	8,209	7,334	35	250·4	89·3	0·4	0·4	3·0
Northern Division	8,362	12,426	53	376·2	148·6	0·4	0·6	4·4	8,450	13,498	52	392·9	159·7	0·3	0·6	4·6
Sind District	2,848	3,459	55	84·9	121·4	1·5	1·9	2·9	2,950	3,690	50	92·7	125·0	1·3	1·7	3·1
Total...	22,750	26,601	176	835·7	116·92	0·66	0·77	3·66	22,967	29,035	165	876·2	126·42	0·56	0·71	3·82

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